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**Work humanization: comparative historical developments in  
the manufacturing sectors of advanced capitalist societies,  
1960-1995.**

**by**

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## 0. Abstract

The thesis draws on official statistics to examine comparative historical developments in the humanization of work in manufacturing industry, engaging with vital debates on societal distinctiveness. The empirical analysis spans the manufacturing sectors of eleven of the leading industrialised nations over the period 1960-95. This substantive core of the thesis is informed by an examination of research method in the field of employment relations.

Initial assessment of the availability and construct validity of aggregate statistical indicators of the humanization of work results in consideration of three phenomena; the rate of incidence of fatal injuries, average annual hours actually worked, and the relative extent of managerial hierarchy. Detailed assessment of the conceptual basis of the available statistics then follows, with the aim of obtaining historically consistent and cross-nationally comparable data on these aspects of work humanization. Although dependable data on fatalities and hours are derived, the limits of the aggregate indicator of managerial hierarchy are ultimately stressed. The comparative historical patterns in the data are then examined for evidence of cross-national convergence in experiences of work humanization. With little indication of any historic convergence apparent the analysis turns to consider the forces which may shape distinctive societal experiences.

Quantitative gauges of the shape of the broad political economy are assembled, with particular attention focused on the quantitative characterisation of the power resources of employees, whether collective or individual. The meaning of these necessarily crude indicators is given extensive consideration. The thesis culminates in separate panel econometric investigations of the political economic characteristics associated with comparative fatal injury incidence and actual annual hours of work. Substantial evidence is presented that the humanization of work is associated with an attenuation of the vulnerability of employees to managerial prerogative.

## 1. Introduction

In the academic circles of the United States of the 1950s there was much discussion of convergence amongst industrial societies. Kerr et al's (1960) pluralist analysis famously emphasised the role of ubiquitous technological and economic forces, arguing that there was a 'logic of industrialism' which dictated the path of development of all industrial societies. Bell (1960) was already proclaiming 'the end of ideology'. There seemed a widely held belief that the US represented the ideal typical mature industrial society towards which all others must necessarily tend (Crouch and Streeck, 1997a).

The recent agenda of workplace employment relations has been much influenced by the notion that an intensifying 'globalisation' is in chain. Even critical commentaries are replete with references to a revolution in communications technology, an intensification of international competition in product markets, and an acceleration of the diffusion of 'best practice' by increasingly integrated trans-national corporations (e.g. Bélanger et al, 1994; Crouch & Streeck, 1997a; Ferner & Hyman, 1998a; Edwards & Elger, 1999). Perhaps allied to such developments, the end of state socialism, and indeed the dominance of the practical philosophy of neo-liberalism, seem a broader influence on analysts' impressions of workplace change (Crouch & Streeck, 1997a).

With the play of global forces emphasised in the media and scholarship, it is tempting to believe that the workplaces of the advanced industrial world are rapidly approaching a homogeneity with real permanence, just as the 'logic of industrialism' of the 1950s suggested. There is now a substantial body of opinion that employment relations in advanced industrial societies are converging in important respects, whether the erosion of the social regulation of employment or the effective hollowing out of those institutional



arrangements that endure is emphasised (see, e.g., Crouch and Streeck, 1997a). With the apparent waning of the distinctiveness of national systems once stressed by authors such as Lane (1989), there seems less space than ever for the political in the political economy of capitalism. Consideration of the role of social actors in shaping the employment relationship can well appear, in this context, a romantic self-indulgence. The notion of globalisation can thus be linked to a celebration of the unique potency of corporate management.

Yet, as Edwards and Elger (1999) note, the play of globalisation on the employment relationship is more often asserted than explored. Indeed, it does seem, as Ferner and Hyman (1998a) argue, that careful examinations of workplace developments tend to reveal substantial endurance in national particularities. But whilst recent years have seen much debate about the extent and significance of indications of convergence in employment relations across national borders, researchers have struggled to offer any comprehensive sketch of comparative workplace developments, and thus to furnish a broadly based assessment of the impact of global pressures.

This thesis explores the recent comparative historical evidence on workplace developments in manufacturing offered by aggregate level official statistics on leading industrialised nations. It deals with the experience of eleven nations; the USA, Canada, Japan, (West) Germany, France, Italy, the UK, Austria, Finland, Norway and Sweden, over the period 1960-1995. It focuses on specific aspects of what is termed here the humanization of work; developments in working conditions and the broader quality of working life.

The notion of work humanization is treated in more detail as an immediate preliminary to the empirical core of the thesis. For now, it is sufficient to stress that working conditions are self-evidently central to the experience of paid employment – to the well being of employees under work relations. As aspects of the quality of working life, working

conditions may well be considered a key outcome of the process of industrial or employment relations, despite the emphases in most quantitative treatments of the area. They must certainly bear on any notion of social productivity aiming to take account of the personal and social costs of production, and not merely the conventional “bottom line” (c.f. Metcalf, 1989). Moreover, work humanization may be viewed as a minimum requirement for, and crude indicator of, the ‘high road’ employment relationship, characterised by high trust and high commitment, of the ideal type celebrated by such authors as Streeck (1992).

As well as mapping recent comparative historical developments in work humanization, this dissertation explores their relation to the political economic complexions of national societies. The analysis thus seeks to contribute to contemporary assessments of the strategic potential of national governments and of labour movements (Regini, 1992; Glyn, 1995; Crouch & Streeck, 1997a; Edwards & Elger, 1999). In this regard, the examination of developments in the manufacturing sector is of particular interest, given its obvious international economic exposure. Ultimately, the aim is to address the underlying concerns of scholars with the space for agency within the generic structures of capitalism (see e.g. Hyman, 1972; 1987; 1994a). Essentially, though, the thesis first turns to a consideration of issues of research method. This locates and informs the empirical core of the contribution.



## **2. Issues of method in research on employment relations.**

The pursuit of substantive issues in social research, of the character of some feature of social reality or of the relations between these phenomena of the social world, inevitably raises issues of research method. Whilst contemplation of such issues is considered a distraction or an indulgence by many researchers, in all those disciplines which deal with the field of employment relations, these issues seem nonetheless critical to the development of our understanding of social reality. If the objective of social science is to develop characterisations of social reality, and to advance understanding of it by establishing causal explanation, the manner in which we seek to do this cannot be considered other than vital. The centrality of the considerations of method to popular notions of science is well justified. Whilst reflections on research method can bring little in the way of mechanical prescription for the pursuit of social scientific enquiry, contemplation of these issues is still of value, in part precisely because the inadequacy of simple research formulae is inevitably highlighted.

With specific substantive research questions, or classes of questions, in mind, issues of research method can be pursued in a grounded fashion, with the danger of drifting into utter abstraction attenuated. The present argument draws on a great variety of studies bearing on workplace employment relations, studies centring on a variety of objects of study, with a variety of different emphases and contributing to a number of different research traditions. These studies are chosen for the light they can shed on the epistemological issues of how we might ask better questions in the analysis of workplace employment relations and how we might better consider the answers which existing studies furnish. The chapter is thus intended to offer something to those who wonder how to better go about a dialogue between the ideas of theory and the ‘facts’ of evidence to develop



understanding of the social reality of the field (see e.g. Ragin, 1987; Hyman, 1994a; Franzosi, 1995; 2000).

Description is a prerequisite for causal analysis. The chapter begins with an assessment of the distinctive descriptive potentials and limits of the research methods typically employed in work on employment relations. The role of surveys, case studies, and official statistics in contributing to our knowledge of the ‘what?’ in the social realm is thus considered. The second section of the chapter deals with key forms of interpretation in the analysis of workplace employment relations. This discussion of the forms of explanation, of theory, common in the field, focuses on the critical issue of the manner in which human actors are conceived and located.

This treatment of forms of interpretation of employment relations then informs the succeeding sections, concerning causal inference. The third section of the chapter deals briefly with the potential of case based analysis in establishing patterns of causation. The fourth section features a more extensive assessment of the potential of the ‘hard’, quantitative, model of social scientific enquiry to deliver the causal understanding it promises in the field of employment relations. Particular attention is given this approach to social inquiry as it is accorded a privileged status by many researchers in the area. The fifth section of the chapter argues that this notion of science, whilst valuable in stimulating quantitative research, simultaneously acts as an impediment to the advancement of understanding. The concluding section of the chapter draws together the various strands, arguing that since numbers are not the solution, but nor are they the problem, a multi-faceted approach to the understanding of workplace employment relations is warranted. Only an approach which stresses the pursuit of substantive issues, rather than insisting on particular research methods or particular theoretical traditions, can allow proper consideration of causal possibilities, and thus push back the metaphysical.

## **Established methods for description – distinctive potentials and practical limits.**

Three distinct research methods have dominated research on employment relations for many years. Survey research, case study and documentary work employing official statistics tend to be performed by researchers inhabiting fairly distinct communities, and communication between them can be problematic. Each has distinct potentials and limits in the establishment of knowledge of the social world.

### ***Survey or questionnaire based research.***

Large-scale surveys have been employed extensively to investigate patterns of employment relations within national borders, with the British Workplace Industrial Relations Surveys (WIRS), and now the Workplace Employment Relation Survey (WERS), prominent examples. Smaller scale applications of survey work, investigating the operations of multi-nationals in particular, are becoming increasingly common (e.g. Brewster, 1995; Kochan et al, 1997).

The survey technique, particularly when executed on a large scale, promises an impression of facets of the employment relation which is representative of the situation in a wider class of workplaces or companies. The purported strength of the method, emphasised repeatedly by its proponents, is the generalisability of the research findings it generates (e.g. Millward and Hawes, 1995). Carefully employed, the technique can indeed afford major advances in knowledge of aspects of the broad state of employment relations, as did WIRS 3 (1990) in evidencing the general decline in the role of collective bargaining in Britain (Millward and Hawes, 1995, 71).



The principal problem of this approach is that responses which may be interpreted as indicators of the typical substance of employment relations may reflect rather the rhetoric or reference systems of respondents (Morris and Wood, 1991; Berggren, 1994, 188). This practical difficulty of the technique underlies the widely shared perception that surveys may be used most readily to identify the existence or absence of formal procedures and structures of decision making. It is now generally accepted that the WIRS1&2 data, showing continuity in the proportion of establishments in which personnel specialists were employed and the proportion overseen by a personnel function represented at board level, which Batstone (1988, 191) cites as indicative of continuity in the influence and status of IR within managerial hierarchies, was misleading. Such workplace infrastructures, along with others such as union representation or works councils, may in practice be by-passed, ritualised, or hollowed out (e.g. Morris and Wood, 1991; Pollert, 1996; Bacon, 1997; Hyman, 1997a). Similarly, the labels pinned on practices may veil a very limited substantive content, as Sisson (1993) recognises in his careful commentary on the relatively greater preponderance of fragments of HRM in unionised workplaces apparent from WIRS3 (of 1990). On the other hand, informal agreements on the shopfloor may result in practices which may bely an immediate survey impression of unrestricted managerial prerogative, and indeed contradict not only the situation officially acknowledged but also statutory regulations, as Martin Wright (1996) showed has sometimes been the case with respect to the closed shop in the UK. Our understanding of workplace practices, and of the discourse surrounding them, is obviously insufficient to justify an assumption that survey findings are subject only to some random error around the substance of workplace employment relations, implying as this would that the typical responses emerging from large samples should be treated as representative indicators of the content of employment relations.



The construct validity of the organising concepts is vital in survey work, with a survey being successful to the extent that it elicits responses which constitute meaningful indicators of phenomena which are of real significance (e.g. Yin, 1994, 34-5). Inasmuch as the aim of a survey employed within IR is to enhance appreciation of social reality on the ground, the precision of the questioning and the relation of the tightly drawn questions to the substance of working life are critical (May, 1997, 98-9; Berggren, 1994, 187-8; 264 n2). Respondents interpretation of the discourse employed by the researcher is obviously critical to their response, as Cicourel (1964) stresses (see also Baldamus, 1978). Research conducted on the significance of phrasing by the Swedish Central Statistical Office (SCB) has demonstrated the paucity of indicators derived from vague questioning, even where the object of the question is itself rather simple. Responses on a Likert scale to the question 'To what extent is noise a problem in your workplace?' were found to correspond very poorly to noise levels as gauged by instruments. Moreover, there were severe problems of reliability in the figures derived, with the same individual prone to give widely differing responses when asked the question on different occasions. More precise questioning, of the form 'Is it so noisy that you cannot conduct a conversation in a normal tone when the machines are on? If so, during what proportion of the day is this the case?: at most one-fourth, at most half?' was shown to elicit a more readily comprehensible response (Berggren, 1994, 187-188; 264n2).

These findings demonstrate the significance of a common understanding of the question posed for the results obtained. Research employing vague questioning in effect abdicates all responsibility for the meaning systems applied, passing this to the respondent. It is then left to the respondent to contemplate the object to which the question refers; the labelling conventions employed. The response is thus conditioned by the respondent's experience and aspirations, with the result thus depending critically on what she takes as



given and what she regards as possible. Responses are thus framed by the reference group of the respondent and by the nature of public debate. Survey questioning should recognise the implications of differing reference systems and labelling conventions amongst respondents, attempting to reduce the impression of what respondents take for granted in their work experience on the responses recorded.

In this context, the play allowed respondents by any looseness or ambiguity in questioning seems a particular problem where the objective is to track changes in employment relations over time, even where the same questions are asked in each round of the investigation and the respondents are those directly involved (Berggren, 1994, 187). It would seem likely that the role allowed differing reference systems, labelling conventions and rhetorics by imprecision in questioning would be likely to generate, if anything, a still greater problem in international comparative applications of the survey method, whether they are historical or not.

Whilst there are real dangers in survey questioning which is vague, there are dangers too of survey researchers seeking precision in their questioning through the use of technical terms, in ignorance of the manner in which this vocabulary may be interpreted or regarded by the respondents whose impressions are sought at arms length. This is one avenue by which the pre-conceptions of the researcher are manifested in the survey, one aspect of the critical issue of what is highlighted and what played down in investigation (May, 1997). This matter of variation in the labelling of workplace practice may cause respondents confusion, with uncertain consequences for their responses, but it may also intimidate the respondent, deepening latent feelings of alienation from the project represented by the survey questionnaire and having deleterious consequences for their effort to respond faithfully. Thus, precision in questioning is best pursued with sensitivity to the conceptual



framework of the respondents, a task which may be very difficult at arms length and in ignorance of the nature of the discourses at the workplaces under study.

Moreover, since the requirement that the respondent should be able to comment knowledgeably on the issues pursued in the survey is fundamental to the technique (May, 1997, 99), the immediacy of their experience of the aspect of employment relations under study is vital. The identity of the respondent is thus of potential relevance, with the responses of managers detached from the everyday reality of the working life of lower grade employees likely to be shaded more by established management discourse and rather less by daily practice on the shopfloor or in the office (Geary, 1996; Rees, 1996). The dangers of eliciting self-serving responses which reflect not so much the substance of employment relations as the self-perception and even identity of actors, and thus perhaps the ideology dominant in the milieux in which they operate, are obvious. Such considerations are of course of relevance when managers are questioned about company practices (e.g. Bacon, 1997).

In summary, the validity of a survey application is a critical consideration and far from unproblematic in the context of such social enquiry at arms length. The dangers of statistical artefacts are legion. The central claim of survey work to be representative is well founded, but the critical issue is what it is that survey responses represent.

### ***Case study research.***

The in-depth case study, employing semi- or even un-structured interview techniques at workplace or company level, and perhaps drawing on the direct observation of work, offers a method for the detailed examinations of workplace employment relations which is more amenable to an assessment of the daily experience of employment relations. It presents



the possibility of a flexible exploration of the instance, reducing the distortion implicit in researchers pre-conceptions through its sensitivity to the discourse employed, and the issues as problematised, by the actors. It thus presents possibilities of pursuing objects of study it is otherwise extremely difficult to explore, in large part because of the ignorance of the researcher about the considerations which are critical in the context and about the discourse which is common in it. This allows the case researcher to surmount the survey researchers' difficulties (which are often unacknowledged due to social distance) in enumerating at arms length the social phenomena which are the object of study. In these ways the method facilitates the discovery of the hidden, unappreciated, unofficial or less readily quantified in the particular instance which is the subject of the case study (Edwards, 1994; Rees, 1996; Franzosi, 2000).

The case technique therefore allows the researcher to delve well beneath the policy statement, nurturing a deeper, more rounded appreciation of the nature of work relations by facilitating an intensive consideration of the operation of professed policies and practices (Morris and Wood, 1991; Bélanger et al, 1994; Pollert, 1996; Bacon, 1997, 17). The technique is likely to be particularly fruitful in furthering knowledge of the substance of working life on the floor if (lower grade) employees are interviewed (Geary, 1996; Rees, 1996; Bacon, 1997). It can also be used to explore in detail the disputed; for example the views of various actors of the distinctiveness of the employee as opposed to managerial groups (see e.g. Kelly, 1998). Case work thus promises a more subtle and nuanced representation of the 'what' in social research, to our knowledge of the state of social reality.

The potential of case work for detailed exploration thus allows it to make an indirect contribution to knowledge. In their exploration of the implementation of professed policy and of the meaning in practice of local institutional arrangements, case histories are of use in interpreting the representation of workplace employment relations offered by existing



survey work, and thus in honing the construct validity of survey questioning (Millward and Hawes, 1995, 72; Bacon, 1997, 3). However, the typicality of the situation described by a company case study must necessarily be in doubt. To some extent, of course, this problem can be mitigated by the working through of a number of detailed studies.

### *The use of official statistics.*

Both survey and case methods have, then, alongside their strengths, certain specific difficulties in mapping and tracking the comparative natures of the workplace IR under different national systems. Moreover, to some extent the methods share the difficulties which arise from the reliance of researchers on the goodwill of employers in order to achieve access to their workforces. Purcell (1994, 213), for example, emphasises the temptation of employers to circumscribe the agenda of detailed employee surveys, even once they have consented to cooperate in principle with research. Furthermore, both case and survey methods are costly.

In the context of these difficulties, summary measures of facets of workplace employment relations which have as their unit of analysis the experience in the entire economy or society may play an important role. Indeed aggregated comparative analysis which focuses on the nature of employment relations in the workplace seems particularly pertinent at a time when public discussion of broad labour market conditions in Europe and more broadly increasingly focuses on aggregate measures of unemployment to the exclusion of all other indicators of the well-being of the labour force as a totality.

The use of official statistics, standardised to varying degrees, is well established in industrial relations, with extensive tables featuring in, for example, Ferner and Hyman (1992) and Bamber and Lansbury (1993). However, even leaving aside for a moment



problems of comparability, which though often substantial are sometimes side-stepped, the quantitative data employed tend to constitute rather remote indicators of the nature of workplace employment relations. The data most commonly relate to industrial production (GDP, productivity, the capital-labour ratio), basic labour force aggregates (employment, unemployment), the structure of employment (by sector/ establishment size/ company size/ gender /status), wages or earnings and differentials thereof, to the institutional characteristics of collective bargaining and employee representation (union membership, confederal affiliation, works council election results) or to one very particular manifestation of worker dissatisfaction - strike activity. These are also the sorts of data commonly employed in labour economics (see e.g. Booth, 1995). Attention to other official statistics which relate more immediately to the nature of the experience engendered by the sale of labour power is very limited within comparative IR, with Wolfgang Streeck's (e.g. 1997) use of snapshots of wage differentials, annual hours and job tenure something of a pinnacle. Outside IR circles, the late David M. Gordon's (1996) comparative work on the extent of managerial hierarchies is a landmark in this regard.

Within IR, the most intense attention to aggregate statistics has been that afforded those on strike activity. With many commentators drawing on official strike records in comparative analysis of industrial conflict, issues of the international comparability of the available data became paramount. Edwards and Hyman (1994) note the problem caused by cross-country differences in the definition of strikes and in methods of compiling data, whilst Shalev (1992) emphasises the changes in the definitions applied within countries over time. Shalev's (1978) detailed treatment of the problems of strike data explores the complexity of a consideration of data validity, commenting not only on the significance of the definition of strike action employed - the thresholds, scope and exclusions of the declared 'subject matter' - but on the relevance of the sources employed and the human

resources committed to data collection. The considered use of a wide variety of sources by a responsible body committed at all levels to the task is vital for the reliability and completeness of the strike record, on the particular definition of strike action ostensibly employed.

Similar issues arise in the interpretation of the available official statistics pertaining to routinised workplace employment relations. The use of any official indicators requires detailed consideration of the conceptual basis and coverage of published statistics which shape the 'hard data' often exclusively emphasised in quantitative work. It is not enough to have collected some numbers - the 'metadata' underlying them should be given proper attention (see Eurostat, 1997a). The considerations which arise in work with official statistics may thus be paralleled with those arising in the treatment of survey responses. Ideally, official statistics may constitute an exemplary survey of specific aspects of the employment relationship, reflecting consensus over the meaning of carefully employed terminology, a thoroughness in corroboration, and a massive coverage. The construct validity of official indicators is however critical, as of course is the execution of collation.

Moreover, there is the issue of the partiality of the representation of the employment relationship which is inherent in the selective focus of official statistics. Thus, for example, the collation of meaningful cross-national comparative data on work organisation seems impossible, whilst the collation of that on at least some aspects of working conditions is not prohibitively tricky. Finally, official statistics generally afford strictly limited opportunities to assess the unevenness of employees' experience within national borders.



## **Forms of interpretation**

This section introduces interpretation, focusing on the critical issue of the attribution of causality. Any analysis of patterns apparent in social reality, whether taken from qualitative or quantitative investigations, involves some attribution, or at minimum suggestion, of causality, whether the implication of the discussion is acknowledged by the author or not. Such social theory may be evident in its most obvious form; as necessarily abstract causal explanation based on some comparison or counterfactual, and thus intended to be generalisable. But, outside labour economics (e.g. Booth, 1995), such explicit theorisation is rare. Nevertheless, in any contribution there is always some commentary which bears on the point of intervention by which change in the particular aspect of social reality which is the object of study may be effected. Interpretations of social phenomena and processes, in ordering muddled reality, feature narrative accounts which amount to causal explanations. In this sense, theory is indeed everywhere (e.g. Hyman, 1994a).

In this causal interpretation of patterns in social activity some distinction between the constraints on the activity of actors and the play of their own influence is common, no less so in empirically based work in the field of the employment relationship as pursued by researchers in labour economics, industrial relations and industrial sociology. Often this distinction is implied, as indeed it can be even in analysis which explicitly disowns such a distinction, such as Clegg (1976). Whilst pointedly denying the relevance of any distinction between 'structure' and 'behaviour' to the analysis of trade union activity, Clegg proceeds with a monograph premised on the shaping of various facets of industrial relations - such as union membership, strike activity and industrial democracy - by the pattern of collective bargaining, a facet supposed exogenous in some sense.

### *Distinctions between structure and agency.*

The nature of constraint-discretion distinctions of this kind thus seems a critical consideration in meta-theory, and thus in the nature of social science explanation itself. The following discussion seeks to explore the notions of structure present in labour literature, to consider the broad nature of critiques of such notions, and finally to come to a view about the meaning, implications and heuristic value of the operationalisation of them.

Where the constraint-discretion distinction is explicitly highlighted it may be expressed in a variety of dualisms, such as structure-agency or structure-actor and material-ideological or materiality-discourse. Often, these dualisms are employed inter-changeably. In certain contexts specific dualisms are used; thus the distinction base-superstructure is common in Marxist, or materialist, discussions of the operation of the capitalist social system as an entirety (see Edwards, 1986). The distinction business environment-company strategy is common in treatment of enterprise management in many traditions (e.g. Hyman, 1987; Andersen, 1997). The precise nature of the notions counterposed in the dualisms is often unclear, to the extent that further consideration of the meaning and purchase of the notions employed in the literature, or lurking beneath texts, seems worthwhile. The patterns of thought which these dualisms embody have profound implications for scholarly treatment of developments in social systems, whether they be specific national capitalisms or particular companies.

### *Notions of structure.*

Hyman (1972), Godard (1993) and Layder (1993) conceive structure as those enduring regularities and arrangements framing social action. The perils of reification



inherent in this dualism are acknowledged by Hyman (1972; 1975). But the distinction made implies that what is critical is the degree of endurance of features of social relations. This view of structure as enduring social regularities suggests immediately the existence of distinct arenas of action, characterised by distinct ranges of agency, in which various groups of actors may shape what will serve as structure to other groups of agents in other arenas. It is thus that the objective structure in which the action of each agent is embedded is shaped.<sup>i</sup>

Layder (1993) suggests that it may be useful to attribute a hierarchy to the formative arenas of action, with some notion of levels of social life. The theoretical space for a consideration of proximate and remote causes, or of what Baldamus (1978) termed ‘the determinants of the determinants’ is thus emphasised (see Nichols, 1997). Craib (1992) notes the centrality of such a notion of ‘ontological depth’ to Roy Bhaskars’ (e.g. 1978) critical realism. The notion of such a hierarchy of influences on social phenomena, of a deep structure, seems implicit in the political science notion of ‘antecedent conditions’ (e.g. Stephens, 1979; Van Evera, 1997). It is also present in a number of contributions in the field of study of industrial relations. It surfaces in the notion that there may be ‘facilitating characteristics’ which ease the process of introduction of innovative work practices (e.g. Edwards and Wright, 1998). It is present also in Pontusson’s (1992b) examination of work organisation at British Leyland and at Volvo, in his comments on the need for an assessment of the significance for job design of the external conditions in which a company operates relative to the conditions internal to the organisation. Sisson’s (1993) comments on the implications for workplace employment relations of the short-termism which characterises British corporate governance structures raise similar issues.

A hierarchy of arenas of action is explicitly stressed in the seminal contribution of Korpi (1978), who distinguishes three levels of analysis – the macro (the societal distribution of power resources), the meso (the functioning and strategy of organised labour)



and the micro (shopfloor activity). It is present also in the commentary of Ferner and Hyman (1992a), who stress 'layers of variation' in national attributes. These layers are distinguished by their durability, with political institutions the most enduring, but the more persistent national features are not regarded as dictating developments in other layers. Such approaches suggest that the agency of distinct groups in distinct arenas may be usefully ordered into some sort of causal hierarchy involving the operation of agency at different levels of the social structure. Of course, the very notion of a structural hierarchy implies a partial subversion of it to the extent that action at deeper levels must necessarily be conditioned by the relevant actors' perceptions of attitudes and patterns of agency and activity of actors closer to the surface. But such approaches positing layers of variation suggest that the critical interventions, which it is the task of social science to trace, may be those embedded deeper in the structure.

Moreover, Layder (1993) writes of the overlaying of 'vertical' and 'horizontal' layers of social activity, stressing the location of agency in any one arena of action with respect not only to other arenas currently active but with respect also to past activity in all arenas. Social agency should thus be located not only in space but in time. The common emphasis of scholars on historical moments at which there is an opportunity for the transformation of institutions which will then have an enduring impact is consistent with such a view of structure. The US multi-national General Motors explicitly stresses the role of 'significant emotional events' such as mass redundancy or the threat of closure in opening up possibilities of changing work organisation (MacDuffie & Pil, 1997). At the societal level, many authors stress the role of parallel conjunctures at which new institutions are shaped by the economic and political context of the time, and then take on a life of their own (e.g. Stephens, 1979; Pontusson, 1984; 1992a; Fulcher, 1991; Ferner & Hyman, 1992a; Visser & Hemerijck, 1997). It seems that such moments are generally precipitated by some



form of societal crisis. The perception of failure may arise from a sudden deterioration of economic performance, from a realisation of undesirable unintended consequences of the path being pursued, or from some form of affront to the moral economy of subordinates which triggers a crisis of legitimacy of hitherto accepted authority. The perception of the failure of existing structures results in a partial ideological vacuum as a feeling of uncertainty and confusion takes hold. This weakening of the hold of the established patterns of thought on actors, encourages them to strike out in new directions.

Pontusson (1984; 1992a) stresses both a politics of legislation and a politics of implementation in the arena of governmental policy making, with each involving conflict within the labour movement and within business and across the capital-labour divide, and argues that these various conflicts have been of differing significance in different policy contexts in Sweden. The emphasis, particularly in Pontusson's earlier work, on the role of structure, or social reality, in delimiting the range of outcomes realisable at the stage of implementation of a reform echoes Marx's suggestion that, ultimately, the purchase of a theoretical analysis can only be assessed by the fate of a practice, e.g. reform, grounded in it. Hyman (1975; 1994a) in particular has asserted the centrality of such a notion of 'praxis' to the Marxist approach. Pontusson (1984; 1992a) does not thus simply assert a distinction between structure and agency, rather he implicitly founds this distinction on a notion that structure is that which is (inevitably) confronted when agency is exercised. It is thus that the 'concrete reality' (Godard, 1993), the 'objective structure' (Delanty, 1997), enters, and is indeed defined. This view of structure as the conditions confronted by action itself suggests arenas or levels of social action or agency, with action in each arena contributing to the structure faced in other arenas. In this context, the identities or beliefs of others may be seen as an element of structure, so that, for example, the ideological resource of broader



solidarity, the significance of which for labour movements is stressed by Goldthorpe (1984), could be characterised in this way.

Whilst it is common to conceive structure as the enduring regularities, it is also often viewed as the incomprehensible. Structure is seen as the complex historical interweaving of forces which it is difficult for an actor even to grasp, even without any attempt at redirection (see Hyman, 1972). This notion of structure seems quite compatible with, and perhaps underpins in part, a conception which stresses durability as a defining characteristic, as there seems no chance of forging a change in forces which one cannot even comprehend. Some authors have emphasised that an agent need not be aware of an influence for it to have implications for their behaviour (Hyman, 1972; Ramsay, 1993). In the context of the diffusion of practices within the multi-national company, Edwards et al (1996) contrast the thrust of deliberate corporate strategy with the drift of an unconscious reflex. The view that structure need not be acknowledged to work its effects contrasts with the hermeneutic view that structural phenomena which are not immediately observable, such as power, are simply fictive (see Layder, 1993).

### *Is the structure-agency dual useful?*

Some of the social theorists who have informed recent contributions in the broad field of employment relations seem to question the relevance of the structure-agency dual, either by denying the space for agency or by disputing the existence of structure. The influential work of Louis Althusser (e.g. 1969) and Nicos Poulantzas (e.g. 1973) has been widely interpreted as amounting to a return to a deterministic and reductionist view of the operation of capitalism, in which ideas are a reflex of economic conditions (e.g. Giddens, 1982; Eagleton, 1994). These abstract contributions give particular attention to the role of



the state and of state actors, as these are seen as the principal means by which purposeful collective or social action might be imagined possible, but seem to have implications for other actors too. Althusser's (1969) notion of the individual's 'imaginary relation' with the social order has been taken to suggest that individuals constitute themselves with the coherence required to act in their specific social roles, whether actively or passively. Ideology, an unconscious product of lived experience, is then best considered not as an epiphenomenon, but as an aspect of the material (Hirst, 1976; Eagleton, 1991), or of the objective structure of society, as it may have been by the later Marx (Eagleton, 1994). Poulantzas (1973) treatment of actors as 'bearers of modes of production' has been taken as similarly suggesting that capitalism is perpetuated through individuals' interpretation of social reality (see Giddens, 1982).

Both Althusser and Poulantzas have been characterised as 'super-determinists', interpreted as suggesting that the structures which endlessly perpetuate capitalism are still deeper than had previously been supposed, lodged in the consciousness of individuals (Jessop, 1982; Giddens, 1982). Regardless of its subsequent employment (see e.g. Edwards, 1986; Kelly, 1989), Poulantzas own notion of the 'relative autonomy' of the state seems, in as far as it is developed in his own work, severely circumscribed. It appears to amount only to the suggestion that state officials constitute a group distinct from the capitalist class who arbitrate intra-class conflicts and coordinate the action required to ensure the macroeconomic and social stability and economic infrastructure necessary for continued capitalist accumulation (Stephens, 1979; Giddens, 1982; Jessop, 1982). Aside from his discussion of Mediterranean military dictatorship, he presents no analysis of the development of specific national capitalisms (see Jessop, 1982).

In sharp contrast, post-structuralism or constructivism stresses the significance of individual perceptions and interactions, suggesting that the aim of social science should be



micro-sociological analysis acknowledging the particularity of each event. Such hermeneutic approaches, such as ethno-methodology, stress the production and reproduction of rules, norms and understandings (Godard, 1993). Delanty (1997) comments on the 'under-theorisation' of agency not only in the structuralist Marxism discussed above, but in such constructivism, stressing as it does the role of culture and ideology in the perpetuation of patterns of behaviour. Here, there appear parallels with Maurice et al's (1986) famed 'societal effects' approach to comparative industrial relations, an approach which highlights the mutual consistencies in the characteristics of systems, suggesting that these behave as a kind of organism, or, as Lane (1989) puts it, a 'syndrome'.

Such perspectives as these are plagued by difficulties in the location of agency. In general there does seem a danger that if the existence of a constraining structure is utterly denied, then 'agency', or ideology, becomes, in a sense, all structuring, allowing individuals no room for manoeuvre. This seems a particular danger to the extent that the reproduction of rules and norms may be unwitting. Authors favourably disposed to the distinction between structure and agency often allow a role for an agent in constituting and reproducing the structure she faces, in so doing emphasising their dialectical approach and deepening their response to the danger of reification. Giddens (1971) and Edwards (1986), dealing with issues of base and superstructure, stress the role of political and legal action in a simple legitimation and rendering acceptable of the existing structure, and thus in the buttressing of it. Hence legal and political superstructures may be critical in the preservation of the apparently analytically prior base through their validation of it. More generally, Paul Edwards presents materialism as an approach to the capitalist system stressing the economic base, conceived in the technicist fashion of Hirst (1976), whilst acknowledging the *conditioning* of it by the social relations and social consciousness of the superstructure



(Edwards, 1986). As Giddens (1971) notes, such approaches suggest that the relation between power and values is not uni-directional.

With regard to employment relations more narrowly conceived, Turner (1998) argues that the maintenance of the substance of the German institutional framework is predicated upon the periodic renewal through the mobilisation of employees of structural arrangements prone to atrophy. The celebrated case work of Burawoy (1985) earlier stressed the significance of employees active engagement, with the 'game' of 'making out' under the piece system, in perpetuating their subordination under the relations of production, arguing that one cannot throw oneself into a game whilst questioning the rules under which it is conducted. There has thus been some acknowledgement, by prominent specialists, of the consolidation of structure through the exercise of agency in the practice of industrial relations.

The constitution of agents is explicit in the work of Skocpol (e.g. 1992) on the role of state officials in the shaping of welfare states. She emphasises the shaping of state traditions and state capacities in social policy, with implications for the nature of social knowledge pursued and comprehended. Indeed, such a process seems evidenced by the Swedish experience, with the initial reaction of the generation of labour leaders who had overseen the functioning of societal rationalisation to the grassroots discontent of the late 1960s being to tinker with existing institutions rather than pursue a new stage of reform (Fulcher, 1991). There is an obvious parallel with the shaping of strategic capacities or organisational capabilities at the level of the management of an enterprise. The distinct trajectory of Volvo with regard to its production systems perhaps provides the starkest example (Berggren, 1994). To some extent, the constitution of agents may have underpinnings in historical material conditions, but there remains room for agents to break free of established patterns of thought, a process which can be only nurtured by the pursuit



of knowledge of alternatives, the centrality of which to ideology is stressed by Eagleton (1994).

As regards agents' constitution of the structures in which they operate, various authors suggest that levels of the structure may be gradually transformed through considered interventions by key actors. The so-called 'social democratic theorists' are an excellent example. Korpi (1978; 1983) and Stephens (1979) suggest that the macro structures of national capitalisms may be incrementally moulded in a way which favours labour by an accumulation of power resources which are mutually conditioning, principally through their role in reinforcing the solidarity and basis for action of the labour movement, but also in demonstrating the potential of organised labour. The suggestion is that such an incremental development of structures may be quite intentionally pursued by an enlightened actor, or series of actors. In this context, Craib's (1992) notion of structure as congealed social action seems apposite.

For Korpi (e.g. 1978) particularly, it is the belief systems of the population which are the critical constraint – faith, solidarity and social closure are critical to the immediate possibilities of reform but subject also to moulding by societal change. Interestingly, the closing comments of Pontusson (1992a) on the prospects of social democracy have similar implications in this regard, although Pontusson's earlier work (1984) highlights the dangers of teleology in the interpretation of national structural formation, stressing the relevance of crisis and the unintended consequences of initiatives with contradictory implications in the evolution of national capitalisms, and specifically questioning the foresight attributed to Swedish social democrats by some theorists. Of course, few if any scholars suggesting the possibility of an accumulation of a mutually supportive system of power resources would deny the vulnerability of such a configuration, as it has been demonstrated most strikingly in Sweden.

Several authors have stressed that the structure within which an agent operates can present possibilities as well as imposing limits – that it is in a sense enabling. Thus Layder (1993,) supports the position of Giddens (1982), expressed in structuration theory, that there is a ‘dialectic of control’ in power relations. In the field of industrial relations specifically, the emphasis of Streeck (1992) on the constraints and opportunities afforded employers by the institutional density of the (West) German system seems intended to advance this point. The significance of the sophistication of the understanding of the agents in question seems implicit in such arguments.

### ***Agency and understanding.***

The notions of structure and agency do generally carry with them a presumption that there is a possibility of emancipatory knowledge. The notion of emancipatory knowledge is inherent in the Enlightenment belief in Reason, and to the modernist project of societal improvement through improved knowledge of the operation of social systems (Eagleton, 1994; Jenkins, 1995; Delanty, 1997). The notion presumes the possibility that there can be a loosening of historical associations which may be erroneously viewed as structural imperatives effecting agents in their arena of action. Thus, at the macro level of analysis, whilst particular societal characteristics may nurture the development of power resources, if the benefit of those power resources can be established by study it may be hoped that rational intervention in societies not featuring such antecedent conditions may weaken the relation between societal characteristics and power resources. This is implicit in Stephens (1979) and Korpi’s (1978; 1983) examinations of the influence of labour movements. Similarly, in the field of study of HRM, whilst it may be that some circumstances nurture high performance work systems (HPWS) whilst others do not, it may yet be the case that



companies not blessed with facilitating preconditions may benefit from HPWS - that they would benefit if a rational intervention could be made (see Godard, 1999). Whilst the port for such interventions may remain to be established, in principle such possibilities represent one means by which historical associations need not represent necessary associations.

The constructivist denial of the relevance of the structure-agency distinction seems to relate to the constructivist position on the possibility of emancipatory knowledge. Lyotard's post-modernism, an extreme constructivism, is characterised by a rejection of the view that knowledge can be emancipatory (Delanty, 1997). Keith Jenkins' (1995) comments on the failure of the modernist project of societal improvement through the advancement of knowledge suggest that this attitude is characteristic of post-modern approaches more broadly. Craib (1992) notes the appeal of a number of such post-modern authors to the non-existence of any 'transcendental signified' which can guarantee meaning in social research in their advancement of a relativist position. If emancipatory knowledge is granted as possible then it becomes meaningful to concede a role for structure – as that of which one is ignorant. Indeed, one might say that the sense in which constructivists neglect agency, trapping actors in a kind of cultural structure, is that they do not deal with the manner in which an actor may break free of reproducing social norms. If they were to, perhaps it would be helpful to employ the notion of structure, regarded simply as that of which one remains ignorant. The underlying issue seems to be that of the potential for deepening knowledge which can serve an emancipatory function (Delanty, 1997, 137), though this issue is itself intimately related to that of the possibility of causal explanation and of the existence of a 'concrete reality' (Godard, 1993) which can be better understood.

By denying the relevance of emancipatory knowledge to social phenomena, the possibility of constructivists achieving such knowledge in theorisation is of course also denied. This itself seems an impediment to the possibility of the achievement of such



knowledge if it is indeed possible. To the extent that relativism and a stress on the rhetorical has taken hold in the social sciences, paralysing critical engagement and debate within academia and between it and the social world (see Delanty, 1997, 3), there does seem less need for urgency in analysis, less meaning in human agency. If there is no objective reality to shape, there is space only for the management of meaning, and the responsibility of social scientists is limited by the implication that there are only individual, or community, 'takes' on phenomena. Feyerabend's 'radical relativism' suggests that 'anything goes'. Whilst some assert that such a deconstructivist attitude can ultimately only affirm the existing social order (e.g. Delanty, 1997, 107), relativists may take a partisan approach. Whether such relativism is deliberately politically imbued or not, a contrast may be drawn with the approach of critical realism, which whilst wary of simple universal causal laws, retains a commitment to the possibility of advancing understanding, by way of more contingent and elaborate causal explanation (Delanty, 1997).

To the extent that one's belief in the possibility of emancipatory knowledge survives constructivist assaults, the urgency of issues of research method remains. The existence of the various approaches to social theory outlined here give some idea of the demands which must be made of research methods if they are to allow the development of understanding of social reality. Attempts at the revelation of patterns of causation are rendered intensely problematic. Two paths are typically followed in developing such analyses, frequently mutually exclusively. One strand of work seeks to derive causal conclusions from case work on companies or workplaces, whilst the other pursues a sketch of statistical relationships across a relatively large number of such cases.



## **The experimental logic of the case study.**

Case work on particular companies or workplaces is widely used in the field of employment relations. By allowing the researcher to engage immediately with social processes, the case study technique promises a detailed exploration of the causal mechanisms underlying the associations between the various social phenomena observed as these influences operate within the boundaries of the unit of analysis (Edwards et al, 1994, 9). Proponents thus argue that exemplary case work involves considered analysis of what amounts to a natural experiment in the social sphere, upon which theoretical generalisation can be based, just as it is in the natural sciences (Yin, 1994, 10). The parallel with research methods in evolutionary biology seems particularly close (see e.g. Gould, 1993).

More concretely, case work may contribute to causal analysis of developments by deepening our understanding of the play of social relations and human agency within the instance under study, of the role of the multiple subjects active at this level. It may do this because it allows the possibility of informed reflection on the significance of actors framing of issues. The possibility of exploring the role of subjectivity can develop appreciation of the meaning of actors actions to themselves, of their feelings and intentions (e.g. Franzosi, 2000; Frege and Toth, 1999). This can help the researcher to make sense of actions which might seem puzzling. The process of case work in the field of employment relations presents a researcher with the possibility to challenge preconceptions of the internal operation of companies, particularly those supposedly general propositions resulting from a priori abstract deduction about what ‘must’ happen at company level. Case work can thus contribute to the ‘how’ and indeed ‘why’ of social research, our understanding of influences and processes in the social sphere. This can inform our interpretation of relations between



data categories apparent from surveys or other research methods, elaborating the mechanisms operating and thus nurturing more nuanced interpretations of those associations which are more general (Edwards, 1981; Elster, 1989).

Whilst case analysis has very real strengths, however, it is also subject to limitations. A case study of a particular workplace, or even company, can offer no broader overview of the more general situation with regard to the characteristics, or phenomena, which are the object of study. The typicality, or statistical representativeness, of the characteristics displayed is uncertain (see Hyman, 1994b, 783). Even if a critical case, in which a phenomenon is most likely to occur (see Edwards et al, 1994, 9), has been correctly identified - a process which is not unproblematic - then the study can provide only an indication of the most extreme instance of the phenomenon. Only very rarely is the number of studies accumulated great enough in relation to the relevant population for a general conclusion about the incidence of the target phenomena to be established from an agglomeration of cases. The costly and demanding nature of case work means that it is relatively scarce.

There are, moreover, practical difficulties in analytic generalisation - in theorisation about the processes which foster the characteristics displayed by the case - which can be traced to the local focus of case work. Geary (1996) comments on the contribution of the case study in 'placing context centre stage'. Bélanger (1994, 49) comments on the necessity in theoretically orientated case work of a consideration of the 'particularities of the context' (quoting Mitchell, 1983), and that 'proper consideration is given to the historical context and the whole social structure'. Mitchell's (1983, 203) elaboration is as follows:

the extent to which generalization may be made from case studies depends upon the adequacy of the underlying theory and the whole corpus of related knowledge of which the case is analyzed rather than on the particular instance itself.



Whilst the importance of a sensitivity to context is thus emphasised in case work, it is clear that no amount of study of an instance can, in isolation, furnish the understanding necessary to appreciate the environment in which the workplace is embedded, and thus reveal the dimensions of generalisation which are warranted from the case study. Although it may be true that ‘every particularity contains a generality’ (Burawoy, 1985, 18), it is extremely difficult in practice to determine the dimensions along which, and level to which, generalisation is permissible (see Edwards et al, 1994, 12). The appreciation of the conditions framing the natural experiment which the instance constitutes, and describing the space within which local activity plays, can only be deepened outwith its confines. This is equally true if several case studies are available, even if they demonstrate a diversity of experience. The location of an instance requires a characterisation of the nuances of the context which necessarily involves stepping outside the social processes of the workplace or company.

The difficulties of case work in contributing to causal analysis are dealt with by a number of authors. Indeed, the notion of ‘entire cause’ elucidated by Thomas Hobbes, in his *Elementary Philosophy* of 1656, captures many of the issues involved in this context. Van Evera (1997) acknowledges the problem of inferring the ‘antecedent conditions’ - the general background structuring or heightening relationships - which gave rise to the particular relation evidenced in an instance. Lieberman (1991) stresses the difficulties in isolating those particular influences which gave rise to the outcome of interest, emphasising in particular the problems posed by the possibilities that outcomes may emerge as a result of an interaction of influences, that influences may be unobserved or neglected, and indeed even by the possibility that there may be multiple routes to a single outcome.



Lieberson (1991) also suggests that the possibility that a relation may be probabilistic presents difficulties for the case approach. But the possibility of a non-deterministic relation might better be thought of as a general tendency impacted by intervening conditions, rather than as a relation subject to chance, with the possible problems raised for the case approach then subsumed by the other problems raised by Lieberson. Regardless of this detail of interpretation, these authors suggest, in Yin's (1994) terms, difficulties with not only the 'external validity' but the 'internal validity' of case work, and indeed implicitly question the value of such a distinction in the consideration of the potential of case work to contribute to causal understanding.

Moreover, since the profile of the context cannot be appreciated solely by study of the social processes of the workplace, the development of that context cannot be so understood. A case study allows only the local mechanisms of causation to be explored. Study of a particular company or workplace allows only a consideration of local influences on outcomes. There is a need to subject the context, the remote influences on local developments, to the same *analysis* of causal mechanisms (see Ramsay, 1993, 78).

Thus it is not simply that case studies of particular companies cannot on their own provide an overview of the situation with respect to the object of study or target phenomenon, a task which may be aided by more aggregated quantitative data. More than this, the validity of theoretical generalisation from it is predicated upon an appreciation of context which requires the sort of historical knowledge to which more aggregated quantitative data may contribute. For example, where aspects of workplace employment relations are the objects of case analysis, the nature of workplace conditions typical in companies sharing some or other of the case's characteristics may themselves constitute a critical influence on developments in the workplace under study, whether via the aspirations of employees and their representatives or the orientation of management.



In any event, the theoretical contribution of case histories of particular workplaces or companies is confined in its analysis to a treatment of local causal mechanisms. The company does not operate in a vacuum, and company management is not the only strategic actor (Purcell, 1994). There may indeed be certain innovations at company or workplace level which are simply not in the gift of management. More surely, though, whilst in the social world there may be no 'iron laws' of mechanical causation (Edwards et al, 1994, 9), developments at the level of the workplace and of the company (perhaps even the very nature of the causal mechanisms of local causation therein) may still be influenced decisively by the complexion of the capitalism in which they are located, and the appreciation of this complexion may be deepened with the use of aggregate quantitative data. Indeed, to the extent that actors may be unwittingly influenced by the broader context of their activity, there seem profound difficulties in seeking to gauge the importance of the political economic soup in which the company floats with either case or survey work at company or workplace level.

The protestation of, for example, Bélanger (1994, 48-9) to the effect that case work does not have inherent weaknesses, is misleading. Kelly's (1998, 133, en3) comment that the generalisability of results from a single case is a problem merely of detailed research design, not of case work itself, is overly sanguine. The validity of analytic generalisation is not unproblematic. Moreover, the penetration of the analysis of the causal structure is necessarily circumscribed.

### **Assessing hard social scientific explanation.**

It is not immediately clear that any of the methods common in employment relations are capable of addressing the differential empirical relevance of these various sorts of perspectives. Nevertheless, it is quite common in the field of employment relations to hear simple appeals for research to employ 'hard data' to discriminate between good and bad theory by explicitly testing hypotheses. The nature of this approach in practice will now be considered.

### ***Hypothesis testing.***

The core objective of social scientific research, with its ambitions of emancipatory knowledge, is to establish patterns of causality. In the context of the present field, this involves identifying the critical interventions which can shape workplace employment relations. In this context, key figures in US industrial relations, such as Adams (1993), stress the importance of the explicit testing of hypotheses in the field, bemoaning the failure of Dunlop's delineation of industrial relations to inspire hypothesis testing research. They argue that research in the area has been predominantly descriptive, with little effort made to derive generalisable findings (see Kelly, 1998). In British industrial relations, the importance of self-consciously testing hypothesis with quantitative data is particularly stressed by those working at the London School of Economics. For example, Frege and Toth (1999) repeatedly refer to the testing of hypotheses in presenting their work on the attitude of members to their unions in Eastern European nations.



Often, the testing of hypotheses is regarded as requiring quantitative data. As Edwards (1981) notes, scientific testing, even in the diverse field of industrial relations, is widely regarded as the bringing of ‘hard’, quantitative, evidence to bear to assess the validity of the implications of explicitly specified theoretical propositions. More generally amongst social scientists, and particularly in economics, theory testing is quite typically regarded as the quantitative and thus scientific alternative to qualitative research. Indeed, there is a common supposition amongst quantitative social scientists, who are most prone to refer to the testing of hypotheses, that there is a hierarchy of research methods, in which case oriented work is exploratory whilst variable oriented work is discriminating, allowing the scientific testing of hypotheses (see Yin, 1994, 3). Mention of hypothesis testing is often intended as a rebuke to those who pursue qualitative work.

### *Empiricism as a model.*

Methodological approaches underlying treatments of employment issues are quite commonly labelled ‘empiricist’ whether they emerge from industrial relations, sociology or economics departments. Empiricism is sometimes characterised as the collection of ‘facts’ outwith any theoretical framework. In the former disciplines, the application of the label is generally intended as a slight on the sophistication of interpretation demonstrated in the research in question, whilst in economics the term is most commonly applied as a badge of approval.

Within the usage common in economics, empiricism is regarded as relating closely to Friedman’s (1953) famed methodology of ‘positive’ economics. Friedman’s methodological prescription, that theory should be assessed by exposing the implications of a model to the harsh judgement of quantitative empirical testing, rests on a distinction

between the assumptions of a theory and its predictions. Friedman argues that the assessment of the empirical relevance of a model should be based solely on the correspondence of the specified predictions with empirical reality, without regard to the apparent correspondence of the assumptions to empirical reality. However, the distinction between assumptions and predictions must be quite arbitrary within an internally consistent and fully specified theory. What are characterised as assumptions might just as well be characterised as predictions, and vice-versa. The denial of the relevance to its empirical validity of those facets of the model characterised as its assumptions afford established theory a formidable protection, effectively buttressing the theoretical status quo, and perhaps by implication also the societal status quo.

Nonetheless, Friedman's prescription, and in particular his distinction between the assessment of the predictions and the assumptions of a model, remains influential in economics, and economists remain for the large part hostile to further methodological reflection (Hoover, 1988; 1990; 1994; 1995). The acceptance of Friedman's prescription is related to the exclusive pursuit of a quantitative, statistical and econometric approach of the sort which dominates labour economics, but which has also a substantial presence also in some schools of sociology, political science, employment relations and human resource management. Ragin (1987) characterises such quantitative work, dealing with a large number of units of observation, as 'variable oriented', stressing the attempt in such work to establish general (causal) associations between quantified variables. As Godard (1999) notes, in the context of such work in employment relations as that relating to unions and wages and so termed 'high performance work systems' and productivity, state of the art quantitative work then becomes focused on establishing some universally true relation between quantitative indicators.



### *How hard is hard data? – from statistics to data.*

Empiricism takes a simple view of statistics as data – the observations given by social reality. Yet, as is now commonly accepted in social science, theory is everywhere, whether its presence is acknowledged in a particular characterisation or interpretation of social reality or not. As Hyman (1994a) stresses, a personnel manager is only such if he is so termed. A contrast between empiricism and critical realism, with the latter's acknowledgement of 'structures' not directly observable, cannot thus be sustained. Empiricism might be characterised as a belief that data categories are unproblematic, an approach reliant on 'common sense' in viewing the state of reality, which makes use of conventional data labels without question. Data categories are not problematised, their interpretation is not subject to critical reflection. Issues of 'meta-data' (Eurostat, 1997a) are thus ignored.

However, empiricism consists of more than an uncritical attitude to existing data categories. The term 'meta-theory' is sometimes used to label the unacknowledged assumptions remaining after any theoretical elaboration or exchange. Empiricism cannot be considered but as an orientation characterised by a lack of attention to, and interest in, theoretical and meta-theoretical considerations at all levels. An empiricist researcher proceeds for the most part unconscious of theory, not only taking as unproblematic the conventional labels applied to series, but jumping immediately to a particular interpretation of the meaning of the relationships between data categories which is established. The broader theoretical basis of the study, the framework with which the data is interpreted, is left unacknowledged, as there is little or no awareness of alternative approaches which throw the particularity of that pursued into relief.

Franzosi (2000) argues that there is a tendency in quantitative work to gloss over the problematic nature of the enumeration of aspects of social reality. He notes that economists seem particularly prone to a presumption that the assignment of a number to a phenomena puts issues beyond reasoned debate. Economists commonly counterpose ethnographic and other qualitative research with 'hard data', asserting that numbers are needed if understanding is to be advanced. These attitudes are not confined to those working in economics departments, but are present for example amongst those who regard themselves as industrial relations researchers (e.g. Fernie, 1999). As Franzosi (2000) stresses, quantification gives the appearance of the scientific. It is certainly the case that numbers conceal doubts and have a veneer of certainty which can very easily seem to justify taking them as datum. The difficulties of the process of enumeration are obscured by the presentation of a precise figure.

The construct validity underlying figures is of course critical; a consideration that also encompasses the vital issue of the social significance of the phenomena quantified. The very history of the enumeration of the previously unquantified, as described by Franzosi (2000), is cause for a critical attitude to the quantitative and the consideration of the wealth of richly detailed qualitative material. Yet, as Franzosi (2000) argues, an engagement in quantitative work tends to blind researchers to such evidence.

Validity is a central issue not only in history, where it has been the object of much attention and discussion, but in social science, where the focus of discussion of the basis of quantitative data has been on issues of reliability, of random error, which are more easily dispensed with under a discourse which is dominated by statistical concepts (Franzosi, 2000). Consideration of the *nature* of the social production of numbers, for example of the likely direction of systematic distortions or biases in official statistics, is vital (Nichols, 1997, Franzosi, 2000). Barrington Moore (1964) stresses the inherent inability of numbers to



represent qualitative change, highlighting the danger that the relative continuity of a quantitative indicator of one aspect of social reality blinds researchers to more substantial change in aspects which have not been enumerated or which it is meaningless to seek to enumerate. As Moore notes, enumeration requires that there be a given pattern within which counting is meaningful – it cannot cope with categorical social change except by glossing over it.

This is not to propose a cynical rejection of all attempts at enumeration, but rather a nurturing of a ‘critical habit’ in the treatment of statistical data (Franzosi, 2000). The use, in secondary analysis, of the more sophisticated statistical and econometric techniques seems inimical to this habit in practice (see Franzosi, 1995). The lack of attention to the shaping and significance of numbers may also encourage a failure to engage with social reality in the interpretation of results. More attention to issues of meta-data would seem likely to undermine the faith of quantitative social scientists in the numbers they celebrate, and encourage more engagement in pursuit of understanding.

### *What when there are no statistics?*

Franzosi (1995; 2000) stresses the paucity of the available statistical data on employment relations. As he notes, where researchers are only interested in statistical relationships, there is a risk that the same issues are turned over and over with minimal innovation, and indeed even that attention is devoted to narrower and narrower questions, as more and more becomes known about less and less. Franzosi (2000) bemoans in particular the absence of quantitative indicators of shifts in power relations, political context and generalised political exchange which can be employed to further understanding of historical

developments in Italian strike activity. This limits the potential of quantitative analysis in the area.

Eric Hobsbawm (1997) discusses the significance of quantitatively oriented economic historians' desire to deal in numbers to their conception of the issues of the social world. Hobsbawm cites Joel Mokyr, arguing that the terrain of enquiry tends thus to be defined narrowly, one aspect of the social system partitioned, and rather little is problematised, in order to make the problem defined amenable to quantitative analysis. Hobsbawm also notes the confluent quantitative professional's need to lay out a problem which is amenable to the conceptual framework available of which she has knowledge; in neo-classical economics a framework which deals in a limited range of essentially simple propositions supposed of universal relevance. In this context, there is then often difficulty in locating precisely what has been established by the resulting empirical work.

Hobsbawm cites research in economic history into the adequacy of the performance of the British economy in the late nineteenth century. The examination of this performance was reduced by some quantitatively oriented economic historians to an examination of whether British entrepreneurs, as individuals, were irrationally short-termist in their orientation in the period. The evidence that they were not was then taken as falsification of the thesis of under-performance in late nineteenth century British capitalism. As Hobsbawm (1997) notes, such an approach embodies a certain circularity of reasoning, since the absence of problems is inferred on the basis of an assumption that these problems can be of only one form. An aspect of the sphere of social relations is delimited according to available quantitative data and conceptual frameworks and then implicitly regarded as the social totality.

A similar practice is apparent in at least some strands of research in economics into gender and the labour market. The tendency of economists to attribute differences in the pay



received by men and women to differences in the sectoral and occupational composition of male and female employment, typified by the comments of Metcalf (1983), deflects attention from inequalities in these aspects of the paid work experience of men and women, focussing attention on the relative pay received by women and men occupying identical job roles. Thus, only one aspect of the phenomenon at stake is dealt with. Paradoxically, it may be that these sorts of procedures can, through the very circumscription of the area problematised and the limits of the interpretive horizons of researchers, nurture a complacency about the power of statistical and econometric technique.

There is a related danger that researchers familiar only with quantitative technique rush to assign a numerical value to a politico-economic characteristic of the organisation or nation under study so as to make this feature amenable to quantitative analysis. This may involve rather little reflection on the significance and integrity of the concept they are attempting to quantify. The literature on corporatism which blossomed in the 1970s and 1980s seemed subject to this weakness. Economists showed a particular impatience to pin a numerical value on the nature of generalised political exchange, or, as they saw it, on the structure of collective bargaining. There followed a series of re-evaluations of the extent of effective centralisation of wage bargaining, as it became apparent that existing enumerations could not adequately account for cross-national comparative difference in economic performance (see Therborn, 1986; Crouch, 1993; Dowrick, 1993). The dangers of circularity in the definition of 'corporatism' were increasingly obvious, as Germany and Japan in particular were reclassified (Therborn, 1992; Edwards & Elger, 1999).

### *From data to draws and series.*

Once variable-oriented researchers have collated statistics in a manner which satisfies them as to their status as data, they tend to treat their empirical material as if it were formed by random drawings from some kind of lottery. The data are discussed as realisations of a ‘data generating process’ (or DGP) (e.g. Baltagi, 1995), a process conceived as a system of equations with a deterministic component disturbed by the draw of a random error. Correspondingly, the data are from thence regarded not so much as representations of social reality but more as a numerical phenomenon in their own right. This is reflected, for example, in the description of historical statistics as (time) ‘series’.

The framing of the determination of a phenomena in terms of an equation featuring a number of variables may be critical in nurturing the variable oriented researchers’ focus on the general rule, the average statistical relation between the variables (see Godard, 1999). Variation around this mean relation is regarded as random variation which might occur for any number of reasons and thus is of little interest. As Franzosi (1995; 2000) argues, outliers are commonly disregarded as exceptions to the rule. This focus is reinforced in economics applications by the notion that the theoretical framework and conceptual tools underlying the model must have a universal applicability.

The treatment of the data as realisations of a well-defined DGP also has implications for the treatment of the dynamics of a variable. Against such a backdrop it is natural to regard, at least in the first instance, any serial correlation of a variable evident as a result, quite literally, of its own internal dynamic. The significance of this treatment is discussed in the forthcoming section on the practice of econometrics.



Moreover, the notion that there is some underlying DGP, an algebraic model of the causal process, seems to nurture a cavalier approach to the issue of causality more generally. Commonly, examination of the pattern of causation is reduced to the tracking of series. Theory becomes viewed as a matter of the variables to be entered in an estimating equation (Franzosi, 1995); a matter of the ‘true model’ in this sense. There seems a definite feeling amongst many variable oriented researchers that beyond the specification and testing of such equations nothing may be done to advance understanding of the patterns the data reveals – the role of interpretation is in this way devalued.

The efforts of econometricians to determine the properties of estimators under various data conditions is of course valuable. However, by exploring the performance of estimators by determining their biases and inefficiencies when used on data resulting from known data generating processes, data thrown up by pre-specified equations featuring deterministic and stochastic components and an implicit causal ordering, econometricians buttress the idea that equations are all that matter. It is implicit that econometrics holds *the* key to causality, if only the correct estimator can be identified. In all this, the status of regression analysis as a technique for uncovering statistical relations seems easily lost.

### ***Association without causation.***

The difficulties of quantitative research extend beyond the issue of the meaning of the data categories employed. The multiple regression techniques which stand at the heart of econometric analysis of theory do not in general offer clear guidance as to the validity of theory. There are at least seven ways to interpret the statistical associations thrown up by multiple regression analysis.

Firstly, and most seriously, they may be absolutely spurious, not grounded in any causal relationship of any sort. Ramsay (1993) highlights the statistical association between the numbers of recorded stork flights and the birth rate in Denmark, an association which epitomises the possibility of statistical relationships which can express nothing of the determination of the phenomena under study. Similarly, Franzosi (1995) highlights correlations between income and the occurrence of sunspots. Moreover, econometricians working to establish the properties of estimators used in regression analysis continue to elaborate the extent of the possibilities of bias in estimators and thus of mistaken inference of statistical associations.

Secondly, the associations established by econometrics may record a highly precarious relation quite non-robust to econometric specification. This may emerge as a result of the selection of certain proxies of concepts rather than others with an apparently equivalent claim to validity. A highly contextual relation which may be stressed by a researcher may appear scientifically established in regression results only because various ‘controls’, whether quantitative or qualitative dummy variables, feature in the estimating equation whose results are reported. Econometric estimation is often a very untidy process, involving hundreds of alternative specifications only a select few of which are reported. As Leamer has noted, econometric results, like sausages, may be better not seen in the making (Franzosi, 2000). Throughout the econometric exercise, the researcher seeks to establish statistically significant relationships which she can make sense of within the theoretical approaches and concepts she is familiar with.

The need to be able to interpret the results, and indeed to offer an interpretation of them which colleagues would find meaningful, frames the practice of estimation and the emphases in the reporting of results. The danger of ad hoc reconciliation in case work highlighted by Korpi (1989) is not absent in statistical work, though it may be less apparent



to audiences. Franzosi (1995) notes the tendency of quantitatively oriented researchers to turn back to the theory which is supposed to be under examination, in order to impose order on the chaos of a multitude of conflicting regression results. To the extent that researchers return to the theory they are assessing to render the results reported comprehensible to themselves and their audience, empirical estimation becomes an exercise in calibration.

Thirdly, the variables taken as dependent and independent may each be (equally immediate) expressions of some more deeply embedded characteristic or characteristics which do, quite generally, drive the measured variables. It is then mistaken to attribute the association between the measured variables as causal. Critically, statistical analysis cannot show whether a variable correlated with the proxy of the phenomena of interest is epiphenomenal. Rather than constituting a lever on the target variable, the regressand, the regressor may itself be levered by a neglected force.

Fourthly, and relatedly, the direction of any causal relation between the variables taken as dependent and independent may not be that supposed. There may be ‘reverse causation’ – the dependent variable may drive the independent. More generally, variables may be mutually conditioning.

Fifthly, the independent variable may capture something of a generalised actual influence on the dependent variable which whilst acting via the independent variable is not reducible to it. Thus the independent variable may not itself constitute the port of intervention, being rather an expression of some underlying general influence.

Sixthly, the establishment of the independent variable may be of significance of itself for the dependent variable, but this establishment may depend critically on the occurrence of one possible sequence or combination of events or circumstances which it is impossible or meaningless to proxy quantitatively. If a statistical relation is predicated on a particular

contingency, or set of antecedent conditions, the sense in which the independent variable causes the dependent is then in doubt.

Seventhly, and the best possible scenario in the application of multiple regression, it may be that the general historical association evidenced by a statistical relationship reflects a 'probabilistic' *causal* relation. Thus the independent variables, in general, afford leverage over the dependent variable of themselves, though this relation may not be universally evidenced in the sample. Indeed, this may be contradicted completely in particular circumstances within or without the sample. To the extent that the latter is the case there is obvious difficulty in describing the independent variables as causing the dependent variable. Even where there is no clear contradiction of a posited causal relation there remain to be explored issues of the differential salience of the factor. Certain underlying conditions may accentuate a general relationship (Van Evera, 1997). Ragin (1987) emphasises that influences tend to act in concert, so that one may best think in terms of a conjuncture of events, or, as Lieberman (1991) would have it, of events occurring in the context of other events (see also Franzosi, 2000).

### ***Confronting causality in variable oriented work.***

Quite generally, regardless of the pedigree of data employed, in its efforts to assess theory, 'variable oriented' work runs into the problem of the attribution of causality. The statistical associations, probabilistic relations, between variables which are uncovered by multiple regression analysis may arise for a number of reasons which are glossed over by the common reference to the 'explaining' of the 'dependent' regressor by the 'independent' regressands.



In the UK at least it is in economics that multiple regression analysis is most intensively, and exclusively, applied in empirical work (see e.g. Booth, 1995). There is a tendency in applied economics to presume that the statistical relationships uncovered by multiple regression are indicative of particular patterns of causality. As Franzosi (1995) notes, there is often thus no attempt to confront the obvious chasm between a statistical correlation and a causal relationship. Those attempts which are made typically depend exclusively on econometricians efforts to come to terms with the issue. Although there has been some journal discussion of the issue (see Hoover, 1990; 1994), even advanced econometrics textbooks typically devote only a few pages to causation (e.g. Greene, 1998). The statistical assessment of the opportunities for predicting one variable with another are central to the treatment of the issue of causality in these academic circles. Three concepts seem central to economists' attempts to address doubts about the causal status of the statistical associations which multiple regression throws up. Although there are some inconsistencies in the usage of terminology, 'weak exogeneity', 'Granger causality' and 'strict (or strong) exogeneity' dominate the terminology used in econometrics to address causal uncertainties.

At its most general, the notion of weak exogeneity relates to the nature of the possibilities of the accurate, or 'efficient', estimation of multiple regression coefficients where allowance is made for the possibility that there may be a two way relationship between certain of the variables through the specification of a system of regression equations. In this context, a variable is said to be weakly exogenous if the parameter attached to it may be estimated efficiently without resort to the full system of simultaneous equations, but by block recursion. Usually, however, the term is employed in a slightly more straightforward fashion. A variable  $X$  is said to be weakly exogenous with respect to a variable  $Y$  if the solution of the system of simultaneous equations shows that the coefficient



on the current value of  $Y$  is not significantly different from zero in the equation where it is entered as a regressor with  $X$  as the regressand.  $Y$  may thus be treated as the sole regressand.

The variable  $X$  is then interpreted by applied economists as being ‘pre-determined’, in the sense that whilst the variable  $X$  may instantaneously ‘effect’ the variable  $Y$ , the variable  $Y$  does not ‘effect’ the variable  $X$ . Although the meaning of the weak exogeneity of a variable is very difficult to explain intuitively in any terms but these, which imply an inference about the pattern of causal relations between variables, theoretically oriented econometricians are careful to stress that the term merely denotes the nature of the possibilities of an efficient estimation of statistical relationships. Perhaps because of the difficulties of an intuitive interpretation of weak exogeneity, the term does not feature as prominently in the applied economics literature as do the other terms which are employed to comment on the causal status of relationships.

The notion of ‘Granger causality’ is central to the remainder of applied economics’ treatment of the issue of causation. The assessment of Granger causality is based upon the statistical analysis of the sequencing of events. This stress on sequential precedence is consistent with the approaches of philosophers of the Enlightenment and after to causality. Jevons refers to precedence in his *Elementary Logic*. John Stuart Mill argues that ‘We may define....the cause of a phenomena to be the antecedent of the concurrence of antecedents, on which it is invariably and unconditionally consequent’ in his *Logic*. Whilst he does not insist on its importance, David Hume, in his *Enquiry into Human Understanding*, writes as though temporal precedence, observed over many instances, were central in conceiving cause. He suggests that with such evidence one may conclude that ‘objects’, i.e. events, are more than in conjunction, but are rather ‘connected’.

Strictly, the assessment of Granger causality can only be made of ‘stationary’ data – time series which demonstrate statistical properties which are independent of time. A



working, or 'null', hypothesis is adopted to the effect that information on the past values of a variable X cannot be employed to improve on the prediction of a variable Y which can be made from Y's past values. There is thus a critical presumption in favour of the view that Y is driven by its own internal dynamic, rather than by any other force. A variable X is said to Granger cause a variable Y if it is shown that past values of the variable X *can* contribute to the prediction of the variable Y to an extent which is statistically significant. The null hypothesis that Y simply has an internal dynamic is under these circumstances rejected.

The concept of strict or strong exogeneity is intimately bound up with Granger causality, but also relates to the concept of weak exogeneity. A variable X is said to be strictly or strongly exogenous with respect to a variable Y if the variable X is not Granger caused by Y, *and* the variable X is weakly exogenous. Thus, X is strictly exogenous if the past values of Y cannot contribute statistically significantly to the prediction of the current value of X which is obtainable from X's own past values, and, in addition, X is pre-determined in the statistical sense described above. The most obvious example of a variable strictly exogenous in any context is age. A person's actual age at a particular moment can be perfectly predicted from their age in previous moments, without regard to any other factor, and moreover, this age cannot, at any moment, be effected by the political, economic or social conditions prevailing.

As should be obvious, there are severe difficulties in the treatment of issues of causation in the applied economics and econometrics literature. In the central concept of Granger causality, causation is conflated with temporal precedence. This notion that the sequencing of developments expresses the nature of the causal relation between them rests on the principle of 'post hoc ergo propter hoc' – a renowned fallacy (Hoover, 1991). Moreover, tests for Granger causation involve a presumption in favour of the internal dynamic of a variable. Unless there is a statistically significant indication to the contrary, the



development of a social phenomena is assumed to be self-generated, rather than shaped by the context in which it occurs.

Many econometric studies show that the variable taken to measure the phenomena of interest has its own internal dynamic – that the observations shown in the series are statistically related to the observation which preceded them. To take a specific example, Pehkonen & Tanninen's (1997) study of the development of the density of union membership in Finland over the period 1962-92 finds that density in any year is closely related to density in the previous year, even where many other variables thought to bear on union density are introduced in to the econometric specifications - in this sense controlled for.

Should this be taken to imply that the density of union membership was literally self-perpetuating in Finland in the period 1962-1992? Does density at any moment, of itself, have causal implications for density in the future, in the same way that, for example, the radiation emitted by a radioactive substance in one period has implications for the emission in the next? More to the point, does density at one moment have causal implications for density in the next moment just as an observation of a computer generated variable which follows a deterministic path subject to some periodic random 'shock' component (a 'random walk' say) has implications for the observation of this computer generated variable in the next period? It seems likely that rather than being causally self-perpetuating in this way, the extent of union density at any time is intimately bound up with a plethora of situational characteristics which are the actual influences on the future course of union density.

In effect, then, the internal dynamic apparent in union density in the study constitutes a gauge of the deficiency of the characterisation of the influences on density offered by the other variables which feature in the data set. It may be apparent from econometric analysis of a data set that a social phenomena has its own internal dynamic. This conclusion may.



however, be a product of the paucity of the data set rather than the self-generating nature of the phenomena. The strict exogeneity of a variable does not imply that its trajectory may not be shaped by the conditions in which it evolves, only that these conditions are not proxied in the data set.

Our perception that there is an internal dynamic is an expression of our ignorance of the causal mechanisms which constitute the social process shaping density. Following from this, the apparent internal dynamic is an expression of the paucity of definition of the phenomena which the dependent variable, 'density', gauges. It is an expression of the extent to which the dependent variable constitutes a gauge not of one well-defined phenomena, but of the state of a process, an organism, a system. The power of the internal dynamic provides a gauge of the imprecision of the concept which the dependent variable expresses, predicated of course on the richness of the dataset. To say that a phenomenon has its own dynamic is to say that we cannot even begin to identify the conditions which drive it. But crucially it is also to say that we are unsure of the nature of the phenomenon which we are seeking to understand. Interestingly, it may then be more appropriate to talk of a data series of interest as a syndrome or an organism rather than a variable, with its connotations of a well-defined and distinct single outcome. The precision of enumeration recedes.

Nevertheless, the practice in applied economics, as it stands, is to assess the causal status of relations according to the possibilities of prediction of one variable from another. Critically, all the conclusions which may be drawn with these statistical techniques are predicated on the data set employed, being valid only conditional on it. As Hoover (1991) notes, Granger causality would be better termed 'incremental predictability'. There seems to have been rather little development in the treatment of causation since the cross-lagging procedures developed by Donald Campbell in the early 1960s (see Blalock, 1964). As the discussions in Blalock (1964) and Persson and Tabellini (1995), writing three and a half



decades apart, demonstrate, there are limits to the distance which statistical and econometric technique can, of themselves, carry us in exploring the causal meaning of the more or less general statistical associations which may be derived from historical experience.

Crucially, the very assessment of causation as it proceeds in applied economics and econometrics relies on the examination of patterns of correlation. Thus, the possibility that the social phenomena being explored is not in any meaningful sense caused by the variables entered as regressors with which it is related, but that this object of study and the indicators treated as regressors are in some way joint products of some unquantified underlying conditions, cannot be addressed. Econometric modelling and statistical assessment have very definite limits. It is not only that their validity depends on the variables reflecting substantial developments, nor is it that one can only hope to identify causal tendencies, and not necessary exact causal relationships. It is that econometric technique cannot of itself establish the point of intervention by which change in an aspect of social reality may be effected. The task of identifying ultimate cause is glossed over.

The determination of causation is not, as the most sophisticated approach to the issue current in econometrics implies, simply a matter of the temporal sequencing of shifts in the quantitative variables in a dataset. Chronological priority does not amount to causal status. It is not simply that the temporal precedence of a phenomenon is insufficient to establish causation. The chronological ordering of the most readily observable indicators may indicate nothing of the pattern of causation. As is often noted in explicit considerations of econometric methodology (e.g. Hoover, 1988), Christmas cards do not cause Christmas and the purchase of wedding rings does not cause marriage. Clegg (1985) throws up an interesting example in the field of employment relations in his early twentieth century history of British unions. He argues that the memberships of some unions held up in the difficult years of the early 1920s as a result of their strength of tradition, and of the intense



loyalty of their members. He thus implies that later movements in union membership may provide some indication of the attachment of members to their union in earlier years. Later developments express something of earlier conditions. In this context, for example, a regression analysis establishing a relation between some indicator of the earlier efficacy of unions in collective bargaining and a later change in union density might be read as suggesting that more successful unions lose fewer members. But it might be better interpreted as showing that a more committed membership, which sustains organisation in difficult times, promotes improvements in terms and conditions. The sequencing of developments in indicators need not correspond with the structure of causal relations, an unfortunate reality bound up with the uncertainty around quite what it is that quantitative variables represent.

Approaches to the issue of causation relying on temporal sequencing cannot overcome the difficulty of inferring causal relations from the statistical associations thrown up in multiple regression, any more than can the use of longitudinal cross-sections, or panels, of itself. As is the case in all regression analysis, associations may express causal relationships, but they may well not. Such an approach to causation cannot address the problem of a conflation of association and causation, as it relies precisely on the assessment of patterns of statistical association. This conclusion may be particularly difficult for those variable oriented researchers working in the neo-classical tradition of economics to comprehend, implying as it does that their very discipline is characterised by social norms, features which are not explicitly recognised in their conceptual framework, and indeed are antithetical to many, despite the efforts of Donald McCloskey (e.g. 1985). Economists' disciplinary norms may thus be all the more strongly held and vehemently defended as simply scientific.



Kevin D. Hoover (1988; 1990; 1994; 1995) develops a remarkable argument which seeks to offer an alternative approach to the drawing of causal inference in econometrics. He argues that the invariance of a system of equations to intervention is a critical test of causality, or what he terms the causal ordering. A causal relationship should not break down when an agent attempts to use it to control the phenomena of interest – Goodhart’s Law should not hold. This approach to the assessment of theory bears a surprising relation to the Marxist notion that ‘praxis’, the application of ideas by actors, is the ultimate arbiter of the adequacy of our understanding (e.g. Hyman, 1975; 1994a). As Hoover recognises, however, his approach begs the question of how an intervention seeking to affect control may be identified. This identification must be based on historical or institutional knowledge – it must be qualitative. Indeed Hoover (1990) implies that something akin to an experimental logic could be pursued, with conclusions about causal orderings of universal relevance obtainable where a change in the institutional context of developments in a particular case is clear. Despite his suggestion of the validity of experimental logic, Hoover also stresses the possibility that a relation may be causal only in certain circumstances, circumstances which might be appreciated only by turning to qualitative analysis, and in any case require exploration in their own right. Moreover, as Hoover (1990; 1994) stresses, the truth claim of a system is limited by the extent to which the ‘errors’ or ‘random shocks’ of the equations which comprise it are explicable. A further role for qualitative evidence is thus suggested.

Interestingly, Hoover does not problematise control itself, being content with the econometric thought experiment ‘if we could control X, then....’. An additional role for qualitative analysis, in identifying a feasible port of intervention for the manipulation of a process, is thus glossed over. Nonetheless, by locating its contribution, Hoover’s (1990; 1994) considered arguments demonstrate the limits of econometric method.



### **Non-scientist social scientific enquiry.**

Explorations of the social world may be regarded as ‘scientist’; as having the form rather than the substance of scientific method, if they obscure the limits of statistical analysis of the social realm, and intimidate with their certainty those who bring to bear a distinct theoretical framework. It is clear that there is a deal of scientism in the field of employment relations. This is not to suggest the rejection of the entire edifice of ‘hard’ social scientific enquiry. But nor is it to suggest the rejection of the detailed case study. It seems rather that there is an opportunity for the fruitful combination of what are most usually competing ‘scientific’ research methods.

### ***The value of efforts at hypothesis testing.***

As already demonstrated, the use of ‘hard data’ for hypothesis testing is insufficient to develop causal explanation. As Franzosi (2000) claims, citing Leamer, statistics and econometrics cannot bear the weight put on them; the falsificationism underlying their use has a slippery nature (Hyman, 1994a). Of course, where hypothesis testing is pursued in qualitative case study problems also arise. Case work is no solution to the difficulties of establishing cause, as an earlier section has indicated. Lieberman (1991) shows the difficulties which the detailed study of a small number of cases has in dealing with interactions and multiple influences on outcomes – there is no simple way to pull apart factors any of which may be shaping developments. Influences may well tend to act in concert, so that one may best think in terms of a conjuncture of events, or events occurring in the context of other events (Ragin, 1987; Lieberman, 1991; Franzosi, 2000). Case work, as is true of all types of empirical study to some degree, is confined to a certain unit of

observation, in a certain period. With regard to case work, however, these reflections highlight the difficulty of the appreciation of the context of an instance, and thus the problems of establishing the dimensions in which generalisation from case work is valid. Yet, as Lieberman (1991) argues, there is a temptation in such qualitative work towards ‘small N and big conclusions.’<sup>ii</sup>

It is misleading to characterise some research methods as tools for exploration and others as the means for hypothesis testing. In practice, the results of all investigations are partial, provisional and uncertain, and raise new questions. The critical distinction seems that between efforts with the intention of assessing the relevance of some specific well established theory or theories and those intended rather to generating new means of understanding. There seems a related distinction between efforts which require absolute conclusions and those which do not demonstrate this need. Researchers may well attempt to draw out associations, attempt causal influences, and be oriented to generalisation to propositions, and thus seek to contribute to theory. But the task of identifying the antecedent conditions on which a phenomena is consequent is an extremely difficult one. In practice, the distinction between ‘theory testing’ and ‘theory generation’ seems more one of presentation and ambition than of achievement. In pursuing understanding, it appears that a more realistic notion of the scientific, and rather less preoccupation with an abstracted notion of it, which distorts even the practice of natural science (see e.g. Campbell, 1921; Gould, 1993), might be fruitful.

This is not to say that an orientation to the testing of well-defined theories is not valuable, whether in quantitative or qualitative work. The explicit specification of the model which this approach involves clearly demonstrates the view taken of the pattern of causation underlying associations. The problem is that researchers then move very readily from establishing association to causal inference. In contrast, the lack of clarity in the causal



inferences often drawn in qualitative work seems likely an expression of qualitative researchers' appreciation that patterns of causality may not easily be taken from associations between events.

The middle ground between the approaches, where there is some explicit treatment of the causal relations underlying relationships which does not jump immediately to the conclusion that the associations evidenced demonstrate the adequacy of a theory, is very difficult terrain. Negotiating it involves some confrontation of the profoundly problematic nature of causal inference.

***Developing causal explanation - a multi-level strategy.***

Quantitative hypothesis testing as it is usually pursued is not enough, despite the value of the analytic orientation it embodies. Large scale statistical work suffers certain profound weaknesses. Such variable oriented work needs complementing, for a number of reasons, with more detailed studies of particular 'cases'. Case studies, dealing with developments more thoroughly than is possible with statistical work, are valuable in several respects. Case oriented work need not deal with a particular workplace or company, despite the common object of study in employment relations, but may of course concern some aspect of the historical experience of an industry, or an entire nation.

Case work allows the exploration of the possible qualitative, or at least unquantified, concomitants of the magnitudes expressed in the statistical series commonly available or employed. This sort of work facilitates a critical appreciation of what data series may be gauging. Thus, case work enables reflection upon the nature of the differences which may be picked up in quantitative indicators, and which may underlie statistical associations. For example, a quantitative cross-national comparative study of inequality may find that a series

describing the coverage of collective bargaining is statistically related to wage dispersion, even when union density, for example, is statistically controlled for. Yet it may not be the extension of collective agreements, of itself, which is critical for wage inequality – rather the variable taken to gauge coverage may reflect the broader historic involvement of the state in the sphere of industrial relations, whether through peak level collective bargaining, statutory employment protection, statutory rights to co-determination, legislation on training provision, or through the implementation of minimum wages. Coverage may thus tend to be associated with a cluster of political-economic characteristics which shape the start point and content of collective bargaining, with the statistical relation between coverage and wage differentials expressing the pertinence of multi-faceted state action for inequality.

More detailed case work, pursued at the level of the experience of particular countries, can thus illuminate the relations between quantitative variables and the mass of unquantified conditions prevailing. Some at least of these may be unquantifiable in the sense that in some dimensions cross-national variations may not be matters of degree but matters of kind, at least in the context of the prevailing conceptual categories.

Case work also deepens the possibilities of seeking evidence of the causal mechanisms reflected in statistical relations by examining developments in a number of dimensions of social reality and at a number of levels of aggregation or observation. The common empirical, or observational, equivalence of theories with regard to one specific phenomenon implies a need for a rather subtler means of assessment of relevance and validity than the comparison of the one dimensional predictions of a theory with some particular aspect of social reality. This accords with the modern concern in natural science that theories be able to account for phenomena other than that for which they were originally intended to account (e.g. Campbell, 1921; Gleick, 1992).



This represents a vital means of assessing the relative relevance of competing perspectives. Rather than seeking explanations of phenomena in isolation, theory should be at least consistent with, and hopefully illuminate, other aspects of social reality, with parsimony regarded more holistically. There is otherwise the danger that the status quo is effectively insulated from critical onslaught, with an implicit feeling that if a single target phenomena may be accounted for by existing theory then no more thought is needed on it. If some alternative perspective then emerges the onus is all on it to offer evidence to prove the irrelevance of the established perspective, a very difficult task in the context of a determined profession defending an established tradition by requiring of opponents evidence far transcending that ranged in its favour.

Variable oriented researchers, and most particularly applied economists, are prone to deal with observational equivalence by privileging one interpretation of data over another on a priori 'theoretical' grounds. Where systems of equations are involved, this privileging is very obviously embodied in the restrictions explicitly applied in econometric estimation (Hoover, 1988; 1994). In such contexts, the critical issue of the underlying causal mechanisms which generated the data manifests itself in the problem of 'identification' which arises in obtaining econometric estimates. In order to obtain parameter estimates, the problem of observational equivalence is confronted by imposing (identifying) restrictions on the form of the model estimated. These restrictions are derived from (a particular) a priori theory, rather than by looking to evidence of the actual micro mechanisms, which may be qualitative in form, completely unfamiliar or inconvenient in its implications for the theory on which everything is predicated. In effect, presumptions about the mechanisms operating are used to organise the story told through the data. Abstract theory is preferred to what may be fragmentary, and qualitative, evidence about the mechanisms actually operating in the social world. In neo-classical economics, this practice is encouraged by the notion that the



fundamentals of theory, at least, (must) have a universal applicability. The result of this approach to the problem of empirical equivalence, which Hoover (1994) terms 'a priorism', has much of the character of a calibration, rather than a test of theory (see also Hobsbawm, 1997).

More generally, the tendency is apparent amongst variable oriented researchers to truncate causal consideration according to the availability of what is regarded as valid quantitative data, with the assessment of data validity of course depending to some extent on the correspondence of the statistics with theory. In neo-classical economics, where only variable-orientation is acceptable, the opportunities for the demonstration of the misleading or incomplete understanding of social developments offered by the frequently severe 'economic realities' confidently propounded by what Thomas Carlyle characterised as the 'dismal science' are thus confined, despite the scientific panoply of mathematical formulation and statistical method.

Paul K. Edwards (1981), in his historical work on strikes in the US, argues that a critical standard according to which theory should be judged ought to be the extent to which the accounts of social phenomena are 'illuminating'. Accounts should demonstrate their validity by illuminating facets of social reality which have remained neglected or puzzling. The 'generally illuminating interpretation' is that consistent with findings of other studies dealing with different levels of aggregation, or with related issues whatever their units of observation or analysis. The application of this criteria involves a more rigorous test of the relevance of a theory. Moreover, it offers the prospect of a progressive development of theory in a way which an insistence on the relevance of some theoretical presumptions cannot (see Hoover, 1994). Edwards (1981) also argues that theory should also offer a 'satisfying account' of phenomena, in the sense that there should be a convincing elaboration of the links between the alleged influences and the phenomena alleged to result.



Elster (1989) stresses the importance of such elaboration to explanation, as opposed to prediction; an essentially descriptive activity.

In large part, case work may play a role in this context by allowing the study of the 'real dynamics of micro relations' (Ramsay, 1993). This knowledge can be applied in the interpretation of macro developments and relations. It can thus make a very real contribution to the assessment of causation, allowing as it does the elaboration of the bases for aggregate relationships. As Ramsay emphasises, echoing Edwards (1981), the combination of micro and macro knowledge is vital for the understanding of causal processes. Despite the claims of Friedman, the assumptions of a model, the meta-physical basis of it, are crucial for the assessment of its adequacy. The inevitability of observational or empirical equivalence of different theories with regard to one facet of reality considered in isolation implies that it could not be otherwise. The consideration of the tenability of facets of the model characterised as assumptions is critical in the assessment of whether the model should be accorded any more credence than a 'just so' story (see Elster, 1989). In the absence of this consideration, a theory may too readily be taken as that special fairy tale which renders the world intelligible (cf Campbell, 1921).

Case work also allows consideration of the limits of operation of tendencies, mechanisms, laws, and, critically, of the basis of these limits within the units of observation (see Ragin, 1987; Elster, 1989, Edwards, 1994). These possibilities of exploring the exceptions to tendencies, of the relative autonomy of, for example, company developments from the society in which the company is embedded, arise because case work allows an examination of the mechanisms, processes and human action within the organisation (Ragin, 1987, 77; Edwards, 1994). Similarly, detailed work can be pursued in the analysis of societal developments. Theda Skocpol's (e.g. 1992) studies of the development of social protection feature the nation state as the unit of analysis, emphasising the possibility of comparative



historical analysis of a small number of cases with the method, drawing on J.S. Mill's method of agreement and method of difference (see Lieberman, 1991). Fulcher (1991) develops a comparative historical case study of industrial relations in the UK and Sweden over a period of a century.

Case work presents, at various levels, the possibility of the consideration of the losses of reductionism, reification, and the collapsing of levels of analysis (see Colomny, 1992). The danger of reductionism inherent in more aggregate research; the temptation to collapse levels of analysis via the assumption that there is a simple reflex reaction to external imperatives, can be attenuated. Case study guards against the squeezing out of the process of agency by allowing detailed exploration of the various arenas in which it is exercised. This nurtures a more nuanced view of the influences at play on phenomena. It allows a treatment of the organisation, which is often treated as a black box, a problematisation of the subjectivity which exists at this juncture. It allows a more general appreciation of the nature of the interactions of social actors, in whatever arena. Thus, some appreciation can be developed of the importance of actors' framing of the conditions facing them, of their orientation in confronting the complexities of their everyday working lives. Frege & Toth (1999), whilst insisting on the testing of hypotheses, stress the role of qualitative historical work in deepening understanding of the meanings held by and intentions of actors. Meanwhile, within industrial economics, Sutton's (1992) increasingly influential approach stresses the importance of case examination of the strategy emerging from management discussions. Some exploration of the role of discourse, ideology, and thus some recognition of its potential play at other levels, is allowed in case work. The notion that humans are bounded in their rationality can then be given some content.

Case work has a vital role too in exploring the basis of diversity, of an outlier, such as a strike wave in an analysis of the history of industrial conflict in a nation (e.g. Franzosi,



1995). The significance of variation around the mean in reality, and the importance of understanding this variation, is easily understated (Ragin, 1987; Lieberman, 1991; De Vera, 1997; Godard, 1997). Whilst the attention of statisticians is generally to the average, the average is an abstraction and the variation the essence of experience (Franzosi, 1995; Gould, 1992). As Franzosi (1995) stresses, if one found in an experiment that, on average, a new fertilizer brought a 20% improvement in crop yield, but in one instance doubled yield, it would surely be interesting to know why. Deviations from means should not be presumed a priori a matter of measurement error, though this presumption is convenient for the truth claims of statistical and econometric models.

Exceptions to the general rule promise much in the way of understanding if they are regarded as more than expressions of a random disturbance to a deterministic numerical relationship. Exploring such issues in the social world requires a savouring of the detail of social reality. Case work may permit exploration which can aid appreciation of which of the historical associations, whether these are between events, arenas, or levels of the social structure, are necessary and which may be not. It has potential in this way to contribute to the development of understanding of the various points of intervention from which change might be pursued.

Furthermore, explanation ultimately requires an assessment of levels of causation, of immediate or proximate and contributing and remote causes. Thus, counterfactuals at a number of levels of analysis are critical. Cross-national comparative work has a vital role in providing benchmarks for the critical assessment of aggregate developments, necessitating as it does the confrontation of a broader range of experience and allowing as it does a more thorough contemplation of a diverse range of societal possibilities (Hyman, 1994a). Whilst variable oriented work is of obvious use in such large scale analysis, case studies at various



levels of aggregation can aid understanding of the conditions on which a phenomenon taken as a cause is itself consequent.

Thus, in the broad field of employment relations, we might seek to explore the basis of cross-national comparative variation in the density of union membership, particularly in the light of such cross-national comparative relationships as that between labour organisation and the development of welfare states (e.g. Stephens, 1979; Esping-Andersen, 1990), and indeed that between labour organisation and working conditions. In his study of developments in Sweden, Korpi (1978, 74-5) argues that the exceptional organisation of the Swedish working class reflected particular 'structural and historical circumstances', societal characteristics which facilitated the development of collective organisation and action. Korpi stresses in particular the relevance of an absence of racial or ethnic tensions in what was a relatively ethnically homogenous society, the weakness of religious divisions, and the influence of emergent socialist ideas as the basis of the labour movement was laid alongside Sweden's late industrialisation. Fulcher (1991) echoes Korpi in his argument that the timing of industrialisation relative to the currency of socialist ideas was critical in the comparative development of the Swedish and British labour movements. Stephens (1979), in his cross-national comparative study, noted the statistical relation of rates of union density in advanced capitalist countries in 1930 to industrial concentration, arguing in a similar spirit to Ingham (1974) that a tight network of employers tends to force the union centralisation which nurtures an extension of organisation. Stephens also notes the roles of ethnic, linguistic and religious homogeneity to which Korpi (1978) accords much importance. But Stephens (1979, 200) stresses the limits of the statistical relation of union density in the opening decades of the twentieth century to these 'structural' factors, and moreover their lack of relation to the subsequent developments in membership density.



The comparative historical pattern of union density, which has been shown to be of statistical relevance to the development of welfare states, is thus itself not determined by identifiable quantified facets of societal structure. Stephens (1979) highlights the importance of qualitative historical investigation not only in the assessment of the contemporary conditions which may be expressed by quantitative variables, but in the examination of the critical events which shape the very quantitative variables which, on the basis of statistical associations, are often accorded causal status. Even to the extent that there are, at some level, general associations between data categories which reflect the influence of one quantifiable social characteristic on another, the issue of the forces which shaped the influencing variable remain to be explored. These latter issues are of course central to the question of the arena in which change was, and may be, forged, the manner in which a solution to difficulties identified may be effected, i.e. to causal explanation.

Relatedly, case work may be used to countenance the possibility of patterns of mutual conditioning. For example, Franzosi's (1995) analysis of Italian strike activity shows that political economic structure, including the pattern of collective bargaining, limits, or shapes, mobilisation, but also that mobilisations transform the political economy. Stephens (1979) attempts to use qualitative material to explore the co-development of labour movements and welfare states which his quantitative analysis reveals. Such nuances are much better amenable to case-oriented study.

In a myriad of ways, then, case work offers potential for a richer understanding of causal processes in a critical sense. It can contribute not only to the elaboration of the nature of a causal mechanism of universal relevance, detailing the manner in which a universal law operates. It can allow an exploration of the conditions under which a law operates, the antecedent conditions on which its operation is predicated or which mute or amplify its operation. It allows exploration of the manner in which causal laws are contingent, and thus



the sense in which they are generative mechanisms rather than causal laws. It can contribute also to the appreciation of causes located deeper in a causal structure. It is thus that case work of particular organisations or institutions can contribute to not only the 'how' but the 'why' of social research, and thus to the development of the pattern of causation and thus bring a richer causal appreciation. The enrichment of understanding which, for example, Edwards et al (1994) stress that case work can bring is thus very substantial.

**Conclusion: multiple methods plus knowledge of alternative perspectives.**

Causal inference is a tortuous task whatever the research method. This however is no excuse for a lack of contemplation of the issues involved. As Hoover notes in his discussion of economists, there is a very real temptation to dismiss philosophical contemplation, to 'get on with the job', although 'resolutely looking the other way does not dissolve the problem' (1990, 208; 228). Whilst any single research method is insufficient for a thorough assessment of theory, the issue is how we might best move forward in advancing understanding of employment relations. In the terms of John Goldthorpe (1998), the aim is to gradually uncover the 'generative process' which underlies the phenomena of interest.

In assessing theoretical perspectives a ruthlessly discriminating attitude is an ideal. Researchers must be self-critical in their orientation, firstly to acknowledge the presence of, and then to begin an effort to push back, the metaphysical presumptions inherent in interpretations. This requires that we draw on an armoury of methods to assess the meta-theory implicit in the theory stressed for the purposes of empirical analysis. In this way we can hope to avoid the essence of an uncritical empiricism in practice. Social science requires a battery of research methods to eradicate the mystical, the unbased and unsubstantiated armchair conjecture, and the presumptions veiling prejudices often sustained by circular



argumentation. With theory ‘a kind of intellectual sticking plaster’, as Hyman (1994a) puts it, this sort of determined confrontation of our beliefs is necessarily painful.

The weaknesses of statistical work, regarded as it is by many as *the* scientific standard, are particularly worthy of emphasis. Determined insistence and effective intimidation are not confined to the community of variable-oriented researchers, but its members are particularly vociferous in their certainty. In the pursuit of research on the employment relation, numbers should not be afforded a mystical status, as if they were the product of divine intervention, the only indicators of the state of social reality. But this does not mean that numbers be reviled or feared. Numbers are not the solution but nor are they the problem. Rather, an approach to explanation which recognises the need to operate in various areas of social activity and at various levels of social structure seems vital. It is only in this way that the residual categories into which unexplained differences are washed up as flotsam in reductionist analysis can be investigated and elaborated.

In this way, the dangers of presuming too much can be attenuated. Otherwise the basis of social scientific enquiry is undercut by the hasty assignation of difference to some residual category. An approach to explanation which allows a number of levels of analysis, more than one ‘middle range’ in the terminology of Merton (1968), promises opportunities to unpack residual categories and explore black boxes, developing appreciation of causation both upstream and down, and indeed to confront the structure-agency dichotomy itself. Research which employs qualitative and quantitative material at various levels, seeking to understand variations across individuals, workplaces, companies, industries and nations seems to stand some chance of illuminating the causal processes which underlie the outcomes apparent in social reality. There is a clear relation of what is being suggested here to the realist approach of Bhaskar (see Craib, 1992; Hyman, 1994a). With such an



orientation we may make better progress towards understanding how it is that the future will resemble the past (see e.g. Ayr, 1980).

Quantitative, variable oriented, analysis, seeking to deal with a large number of cases, can be extremely useful to social science. But such work may be pursued much more fruitfully if it is complemented with the insights which detailed case analysis may furnish. Case work can enrich appreciation of what that quantitative data which is available might express, and, moreover, nurture appreciation of what it does not express. It can provide additional dimensions of evidence along which theory can be assessed. It promises a richer causal appreciation and a greater depth of explanation in recognising the potential relevance of a number of arenas of action, or levels of agency. It also allows the prospect of some unpicking of organisational or societal trajectories, of the patterns of mutual conditioning which can lend units of analysis the quality of organisms.

However, a combination of research methods is not sufficient on its own. More than a century ago, Sidney and Beatrice Webb (1897) commented on the bias introduced into the selection of facts by limited theoretical knowledge. A knowledge of alternative interpretations and of associations is critical in the context of observational equivalence:- to assess the significance of an alternative interpretation for the understanding of social reality, one needs to have knowledge of that alternative system of thought. In its absence, research communities' deeply held prior beliefs, infusing their social identities, straitjacket the sorts of analysis developed and the sorts of argument to which they are receptive. As Walter Korpi (1996) emphasises, an environment of theoretical pluralism is critical in attenuating prejudice.

Critically, the development of causal explanation requires that research is issue driven, rather than motivated, and thus circumscribed, by a particular research method (see e.g. Ragin, 1987; Franzosi, 1995; 2000). If we recognise the importance of establishing the



causal mechanisms which give rise to particular phenomena without jumping too readily to conclusions about them, awareness is nurtured of differing means of theorising and interest provoked in developing research methods which reach beyond the conventional methods to draw on the strengths of differing research traditions.

The remainder of this thesis is devoted to a study of work humanization. This empirical analysis is informed by these considerations of method, in the emphases of the investigation, and most of all in the limitation of the claims made for it. The next chapter introduces the notion of work humanization, and considers the potential of research employing official statistics in this area.

### **3. The humanization of work in manufacturing.**

This chapter introduces the comparative historical overview and examination of developments in work humanization in the manufacturing sector which constitutes the heart of this thesis. The concept of the humanization of work is first elaborated, and its relation to that of work organisation briefly considered. The availability of aggregate indicators of sectoral developments in work humanization is then considered. Finally, the significance and potential of research on employment relations in the manufacturing sector is stressed.

#### **The notion of the humanization of work.**

In the late 1960s and early 1970s discontent amongst production employees erupted in the manufacturing workplaces of many countries, particularly in Europe. This dissatisfaction was often manifested in industrial action not sanctioned by union leaderships (Crouch & Pizzorno, 1978; Shalev, 1992; Terry, 1994). The grassroots rejection of established patterns of industrial relations encouraged unions, union confederations, and broader national labour movements to develop agendas for workplace change. These representative organisations of labour were thus reoriented away from their traditional preoccupation with the ‘bread and butter’ issues of contractual terms and conditions, focused principally on remuneration (Terry, 1994). In the first half of the 1970s, in a period of sustained self-assurance of labour movements across the European continent, union demands in many countries coalesced around a pursuit of a ‘humanization’ of work.

The nuances of the notion varied from country to country. Broadly, however, humanization was conceived as a project which expressed and advanced workers’ concerns



over health and safety at work, the drudgery and intensifying pace of Taylorised work, working hours, and, at their most general, workers' concerns over the reach of managerial prerogative in the workplace (Bosquet, 1972; Kelly, 1982; Streeck, 1992; Jurgens et al, 1993; Berggren, 1994; Terry, 1994; Franzosi, 1995; Roth, 1997). In most European countries, substantial elements of national labour movements quickly came to share these aspirations, differing only in the relative emphasis accorded the different facets of humanization. It seems that it was in those countries where wildcat action jolted bureaucratised labour movements which were well articulated and deeply institutionally entrenched, that the humanization agenda blossomed most, with pronounced change in the agendas of the movements of West Germany and Sweden (see Jurgens, 1993, Berggren, 1994; Terry, 1994). There were, however, European movements for which little changed. The growth of the new agenda was peculiarly stunted in Austria, where wildcat action was absent in the late 1960s (Traxler, 1992), and in the UK (Terry, 1994). Employers in some countries seemed quite generally disorientated by employees' new found self-assurance and newly expressed non-pecuniary aspirations (e.g. Franzosi, 1995), but in most nations significant management groups came to accept that the bargaining agenda had shifted (e.g. European Association for Personnel Management, 1979).

Outside Europe, related shifts in the agenda of industrial relations ensued, although a rather different terminology was often employed. In North America, concern with 'blue collar blues' from the end of the 1960s resulted in discussions of the Quality of Working Life from the early 1970s (e.g. Stephens, 1979; Turner, 1991; Berggren, 1994). In Japan, the debates of the early 1970s on the reconciliation of work and life were often couched in similar terms (e.g. Takezawa et al, 1982). But in these countries the debates were rather shorter-lived, petering out even before the decline of societal interest in work humanization in Europe (Berggren, 1994).



Towards the end of the 1970s labour was thrown increasingly on the defensive, whilst employers began to pursue a new agenda themselves, centred around the utilization of labour power at the point of production. With the resurgence of employers, the concept of work humanization was eclipsed. The shifting emphasis of public debate was paralleled by that in academic research on workplace industrial relations in manufacturing, which became increasingly organised around the rather narrower notion of work (re)organisation (e.g. Jurgens et al, 1993).

### **A return to convergence?**

It is in the context of these debates around work organisation that the perennial issue of convergence of industrial capitalist societies has resurfaced in the field of workplace employment relations (e.g. Crouch and Streeck, 1997; Kochan et al, 1997). Various influential interpretations of recent developments in manufacturing industry emphasise an ongoing convergence of production systems across industrial nations, towards flexible specialisation, lean production, Japanization or other notion of Post-Fordism (see Elger, 1997). Many such analyses, including the influential Womack et al (1990), share an upbeat assessment of the implications for production workers throughout the advanced industrial world.

Against such universalistically sanguine perspectives are ranged contributions which reassert the persistence of a variety of forms of flexible mass manufacture. For example, many commentators in the comparative literature seek to distinguish different forms of 'team' working in manufacturing, each with its distinct implications for labour (e.g. Berggren, 1994; Turner and Auer, 1994; Roth, 1997). Such contributions distinguish between a geographical form of team working, in which the teams or crews defined by management according to department face jobs which remain Taylorised, and a more



meaningful notion of it under which there is a horizontal and vertical integration of work tasks - implying longer job cycles and more varied production work. Such authors emphasise parallel differences in the nature of employee involvement in workplace change, contrasting variants of continuous improvement (Kaizen) in the production process in which change is management led from others in which change is employee led (e.g. Berggren, 1994; Roth, 1997).

Whilst cross-national differences in employment relations are emphasised in these contributions, another strand of literature suggests that whilst there is diversity in employment relations, it is increasingly across the boundaries of companies, rather than across national borders. Particular emphasis has been accorded the role of multi-national companies, with authors such as Crouch (1994), Crouch & Streeck (1997a) and Kochan et al (1997), arguing that nations' workplace employment relations are increasingly similar in their internal variety, with company rather than societal institutions the critical influence on working life, regardless of the host nation.

The course of the debate on the forms taken by contemporary restructuring of work organisation suggests that the accumulated understanding of the national institutions of industrial relations is unmatched by cross-national comparative knowledge of employment relations on the ground, which remains patchy. There does seem widespread recognition that knowledge of employees' experience of workplace industrial relations is unsatisfactory, falling short of that accumulated on collective bargaining arrangements, on local institutions of employee representation and on formal grievance procedures (e.g. Bélanger et al, 1994; Edwards et al, 1995). The study of workplace employment relations is of significance because formal arrangements are incomplete and their operation problematic. Collective agreements are interpreted at local level and are often of a complex and even sedimentary



nature which makes their implications in practice difficult to assess. Moreover, there remains the possibility that what is agreed, or even imposed, may not in any sense be effected.

### **The use of official statistics.**

Academic discussions of developments in workplace employment relations usually draw on company level case studies, and make limited use of quantitative data. The use of official statistics in the core of research on the workplace employment relationship is limited, with Wolfgang Streeck's (e.g. 1997) work the most prominent example within mainstream industrial relations of contributions relying significantly on such data. Scholars such as Theo Nichols (1997) and the late David M. Gordon (1996) have, however, sought to use official statistics in a more thoroughgoing way to inform understanding of national and cross-national developments. Such authors see a role for such work, taking nations as the unit of observation, in providing a sketch of the situation in the typical workplace of a country, although such representations inevitably gloss over the variation in experience within national borders which case and survey work evidence. Aggregate indicators offer the possibility of a characterisation of the organisational performance of a nation, and thus of a mapping of comparative developments across social systems in their entirety.

This thesis seeks to establish an enhanced role for the analysis of aggregated quantitative data in the cross-national comparison of workplace employment relations, dealing with official statistics relating to the experience of employees in the manufacturing sectors of advanced industrial nations. Whilst such aggregate data can contribute little specifically to the analysis of the organisation of work, around which much of the recent research in comparative workplace industrial relations has been organised, there does seem much scope for such data to inform the longer standing and more encompassing debates about the humanization of work. Naturally, the availability of official statistics, both across



countries and over time, necessitates a pragmatism in the selection of indicators of workplace developments. This does not preclude the critical assessment of the available statistics, however. In the selection of the indicators, the issue of construct validity was paramount, statistics were sought which revealed something substantial of the social reality of work.

Statistics on labour turnover are available for a number of advanced industrial nations over a fairly prolonged period, and often specifically on manufacturing (e.g. OECD, 1986, Table II-3). The manner in which these figures should be interpreted is far from clear, however. Relatively low turnover may suggest employees' contentment with their work, but it may equally well result when intense frustration and dissatisfaction is coupled with strictly limited external alternatives. A similar problem arises with figures on sickness absence, which are in any case very much less readily available. Low levels of sickness absence may be a result of relative job satisfaction, but may equally result from the extension of brutal managerial approach to the issue of sick leave. Both labour turnover and sickness absence thus constitute profoundly ambiguous indicators of the state of working conditions, even in principle.

Statistics derived from employee self-reports of well-being represent an alternative indication of working conditions. Figures on self-reported job satisfaction are available for a number of nations over a fair span of years. Typically, such figures simply record the proportion of employees replying in the affirmative to the question: 'Are you satisfied with your job?' (see, e.g. Oswald, 1997). Whilst superficially attractive, such measures of self-reported well-being are intensely problematic. It is not merely that it is difficult for an individual to confront her identity by conceding dissatisfaction at work (e.g. Berggren, 1994). Vague survey questioning, of the type underlying figures on job satisfaction, yields results of spurious precision. As was suggested in the previous chapter, on method, such



problems seem likely to be of particular importance in comparative historical work, with the meaning structures of respondents self-evidently varying across countries and over time.

Within the confines imposed by the available statistics, it is however possible to collate comparable series which describe relatively unambiguously significant aspects of the working conditions of employees. Three indicators are explored in this thesis: fatal injuries, annual average hours worked and, more problematically, the extent of managerial hierarchies. The concern with the meaning and significance of the data compiled which informed the selection of the indicators was carried over into the painstaking task of collation, a process of exploration and substantiation drawing on a substantial array of national and international sources. The central issues were those stressed by Shalev (1978) in his discussion of official statistics on strikes – that of the precise subject matter of the statistics and that of the comprehensiveness of the collection effort mounted by the agencies responsible in the various countries. These intricacies of meta-data were frequently extremely difficult to establish, so that the process often seemed akin to detective work.

The historical and cross-national statistics derived and explored here provide an overview of key aspects of work humanization in nations' manufacturing sectors as entireties, promising systematic cross-national comparison across the manufacturing sectors of each of the G7 nations, three Nordic countries and Austria. These nations were selected principally for the span of institutional environments which they afforded. The historical dimension of the statistics presents the possibility of reaching back and tracing comparative developments right from 1960, the heart of the 'Golden Age' of post-war capitalism, through the resurgence of worker militancy and manifest crisis of the 1970s, and into the profitability recovery of the 1980s and 1990s.



## **The significance of manufacturing.**

Commentaries on economic developments in advanced industrial nations very commonly feature some reference to the declining significance of manufacturing industry. The experience of a massive expansion of service sector activity, whilst varying in its extent and in the division between state and private delivery, alongside some degree of de-industrialisation, has been shared across the advanced industrial world. As Hyman (1991) argues, it is not immediately clear that the experience of employment relations in manufacturing is representative of that in the political economy more broadly. In this context, a research focus on the nature of employment relations in nations' manufacturing industries might well be regarded as outdated. Although the sector still directly accounts for at least one fifth, and often a quarter, of employment in each of the advanced industrialised countries, one might readily conclude that research efforts are best directed elsewhere. However, the particular nature of the sector itself, of the available research materials and of the issues confronting contemporary social actors is such that this conclusion is premature.

As a terrain of enquiry, manufacturing has certain advantages over some other branches which are related to the nature of the industrial activities encompassed by the manufacturing sector. Manufacturing represents a sector which, whilst having a complexion which varies from country to country, is less subject to the vagaries of the natural environment than are the extractive industries or agriculture. In this sense, the cross-national comparison of employment relations in manufacturing sectors is more meaningful than would be a comparison across, for example, nations' oil industries, operating as they do in very different physical environments. The problems arising in cross-national comparisons of this sort are particularly acute with regard to injury experience. Given their differing



sectoral compositions, similar problems arise in efforts to compare aspects of employment relations across national societies as entireties.

At the same time, taking the manufacturing sector as a whole as the unit of analysis offers some advantages over more closely targeted studies of manufacturing activities. Studying manufacturing in its entirety circumvents the very real risk of excessive control for supposedly extraneous influences on workplace developments. There are parallel dangers in other fields of study, with discrimination at work on the basis of gender being an obvious example. The tendency of economists to attribute differences in the pay received by men and women to differences in the sectoral and occupational composition of male and female employment, typified by the comments of Metcalf (1983), deflects attention from inequalities in these aspects of the paid work experience of men and women, focusing attention on the relative pay received by women and men occupying identical job roles.

Similarly, there is a danger of pursuing comparative work on employment relations in a manner which partitions off much cross-national variation which would be much better regarded as part of the phenomena under investigation. The matching of workplaces across national borders according to attributes such as sub-sector, company or workplace size, and even product market positioning is central to National Institute of Economic and Social Research (NIESR) work (see e.g. Prais, 1995). It is even more pronounced in the work of the 'societal effects' school, who often match according to the additional criteria of the urbanisation of the locality, physical production technology employed and position in the supply chain (see Hartmann et al, 1983). Such methods imply that, by construction, cross-national variation in the dimensions matched for is treated only in the second instance, if at all. Differences presumed compositional a priori are thus matched away in such work, at least in the first instance, just as they are corrected away in much quantitative work on discrimination.



Research pursuing difference at the level of the manufacturing sector as a whole avoids this risk of an adjusting away of cross-national variation in the object of study on the basis of what amount to causal assumptions about the influences on social phenomena. This does not then preclude some considered assessment, or even subsequent decomposition, of sectoral developments, employing the material available bearing on the differing textures of nations' manufacturing industry. Here, of course, more tightly focused work on particular manufacturing activities comes into its own.

As Williams et al (1994) suggest in their discussion of relative productivity (hours per car) in the auto industry, a considered, incremental, decomposition from initial observations, which takes trouble not to afford the attributes by which it proceeds causal status, can offer much in the way of understanding of the influences underlying variations. It is however critical to avoid the explanation by accounting which a mechanistic approach to decomposition, to matching, and to adjustment can nurture. At minimum, the more aggregate approach, operating at the level of manufacturing sectors as entireties, has the benefit of stressing the full extent of cross-national difference in the first instance.

The very intensity of research effort already devoted to manufacturing by statisticians and social researchers means that it is an attractive sector for study in another sense too. Due to the early significance of manufacturing, the quantitative data relating to the sector tend to stretch back relatively far, and thus also to have benefited from extensive critical reflection by statisticians, and in some areas by quantitatively oriented social scientists. Moreover, the availability of a wealth of more qualitative material on the sector furnished by decades of academic analysis of developments in employment relations in manufacturing provides a rich vein of knowledge which can be utilised in the interpretation of quantitative material, facilitating a more nuanced analysis of both cross-national comparative trends and statistical associations.



Perhaps the most critical characteristic of the sector, however, is the weight of manufacturing industry in the segment of the economy directly exposed to international competitive pressure. The exposed sector might be conceived in a number of ways but, as Glyn and Sutcliffe (1999) note, exposure to international competition is most obvious for exported goods – those products competing directly and immediately on world markets. Statistics showing the weight of manufactured goods in all exports thus provide an indication of the centrality of manufacturing to the internationally exposed segment of the economy.

One UN source (1994b, Special Tables A&G) suggests that exports of manufactured goods from the UK in 1994 amounted to US \$167 billion, of total UK exports of US\$ 204 billion. This suggests that manufactures constituted some 82% of the value of total exports from the UK. The precise meaning of the categorisation underlying these figures is unclear, however, and it seems that the percentage derived rather overstates the significance of manufacturing in exportation. Fortunately, other data is available.

More readily comprehensible sources show that manufactured products accounted for around 90% of the value of exports of physical goods from the UK in the early 1990s, with less than 10% comprised by the products of agriculture and the extractive industries (UN, 1994a). This share of manufactures in physical exportation is substantially greater than the three quarters share of manufactured goods in physical *imports* typical in OECD countries in 1993 which is derived by Glyn and Sutcliffe (1999). The difference occurs as the weight of primary goods imported to the advanced industrialised nations typically exceeds the weight of primary goods in exports. With this in mind the figures cited by Glyn and Sutcliffe (1999) thus afford some reassurance about the 90% proportion.

However, all this of course leaves unaddressed the extent of exports of services, as opposed to physical goods. The OECD (1997c, Table 10) reports that in 1994 the UK



exported 'merchandise' to the value ('free on board') of £153 billion, with total exports of goods and services valued at £201 billion. This suggests that exports of physical goods accounted for 76% of exports of goods and services in 1994. This sort of figure is consistent with the suggestion of Glyn and Sutcliffe (1999) that commercial services typically accounted for around a quarter of OECD exports in 1994. Taken together, the UN and OECD sources, corroborated by the comments of Glyn and Sutcliffe (1999), suggest that in the early-mid 1990s manufactured goods accounted for a little over two thirds (90% of 76% equals 68%) of the value of all exports. In this sense then, manufacturing represents the core of the sector of the economy exposed to international competition.

More encompassing notions of international exposure suggest that manufacturing is rather less predominant, but still central. Glyn and Sutcliffe (1999) argue that around 60% of those employed in the OECD are almost totally insulated from global competition, implying that 40%, including all employed in manufacturing, are exposed to it to some degree. With manufacturing typically accounting for 20-25% of paid employment in the economy as a whole, their discussion suggests that, across the OECD as a whole, manufacturing employs more than half of those exposed to some significant extent on global markets.

Scharpf's (1999, 128-9) characterisation of the exposed sector is the most extreme in academic currency, but still implies a weighty role for manufacturing industry in the segment subject to global product market pressure. Scharpf (1999) argues that ISIC divisions 1-5 and 7-8 should, in their entirety, be regarded as exposed. Thus, the exposed segment is defined by Scharpf as all of agriculture, mining and quarrying, manufacturing, the utilities, construction, transport and communications and financial services. The OECD (1997b) suggests that in 1996 these divisions typically accounted for half of total employment in advanced industrial societies. Thus, on Sharpf's (1999) conception, manufacturing accounts for some two fifths of the exposed sector. Even on his extreme

assumptions about the pervasiveness of global product market competition, manufacturing constitutes the core of the exposed segment of advanced industrial economies.

In this context, research on manufacturing has a special place in the context of current debates about the space for social action in the increasingly internationalised economies of the advanced industrialised world. In a sense, the manufacturing sector constitutes a massive critical case in the analysis of the play of global pressures. If global forces compress cross-national differences anywhere, one would expect it to be in manufacturing industry. If there is evidence that employment relations in manufacturing are shaped by politico-economic conditions, powerful support for the view that the state and other social actors can exercise leverage on workplace developments more generally is furnished. Moreover, manufacturing is such a huge case, of such significance to national economies even at the close of the twentieth century, that its experience can hardly be written off as an atypical anomaly as case work of particular workplaces or companies often is.

The following three chapters establish comparative historical indicators of developments in work humanization in manufacturing, based on official statistics. It is to the comparative historical experience of industrial safety that we first turn. This chapter on injury experience is then followed by chapters on working hours and on the extent of the managerial hierarchy.



#### **4. The incidence of fatal injury in manufacturing.**

This chapter explores the official statistics available on the incidence of occupational injury in the manufacturing sectors of leading industrial societies. It argues that statistics on fatal injury are very much less problematic than those on less severe injury. Yet although there are many cross-national commonalities in the nature of the statistics on fatal injury available, a critical treatment of the figures available is vital. With painstaking attention to the basis of the figures published for each country, data on a consistent basis spanning the experience of eleven nations over the period 1960-95 are assembled, subject to few qualifications. A partial corroboration of the comparative patterns apparent in this data is then achieved with the use of the limited statistics available on fatal injury incidence in particular branches of manufacturing, particularly iron and steel. Finally, the evidence of a convergence in the fatality experience of the eleven nations' manufacturing sectors is considered.

#### **The significance of occupational injury.**

Mutilation in the course of work is a common experience in the lives of many employees even in the advanced industrial world, and the injuries sustained sometimes result in death. Industrial safety in organisations must be considered a crucial aspect of working life. The Labour Research Department (1997, 28) highlights British evidence of the debilitating effects on employees of anxiety over exposure to harm. Injury and the threat of injury represent personal violations which may well be seen as challenges to the dignity of the individual.

Several commentators have argued that injury experience is in large part a result and expression of the sheer exhaustion of employees (e.g. Rabinbach, 1996; Nichols, 1997). Grunberg (1986) and Nichols (1986) argue that injury experience can be regarded as an expression of the bounds placed on the exercise of managerial prerogative in the workplace, making explicit reference to the safety precautions in place. Injury certainly seems related to the organisation of work, broadly conceived. It seems linked to the work intensity and stress involved in production systems, and to the fragmentation of work implied by the repetition of short job cycles (e.g. Fucini & Fucini, 1989; Berggren, 1994). Recent studies have suggested that some injuries, particularly repetitive strain injury (RSI), or cumulative trauma disorder (CTD), are more common under lean systems of manufacture (Fucini & Fucini, 1989; Graham, 1995; Rinehart et al, 1997). Particular academic attention has focused on the extent of incidence of carpal tunnel syndrome (CTS), a severely debilitating soft tissue injury to the wrist, in the US plants of Japanese car assemblers employing thoroughgoing lean production regimes (e.g. Fucini & Fucini, 1989, 178-84; Graham, 1995, 86-93 & 145). Such suggestive findings may well be a result not only of the sheer pace of work, but of the psychological tension apparently created in the individual under lean systems by work processes which do not permit a complete detachment from the job. A worker under a systematically implemented lean regime may not openly hate her work as she was permitted under Fordism, leaving the individual to a daily work experience of contradictory emotions (see Graham, 1995).

Through its association with the pace of work, the stress experienced by individuals, the fragmentation of work, or at its very broadest, the reach of managerial prerogative, injury experience may thus express something broader of the nature of the employment relationship. Injury experience may also indicate something of the texture of the social relations of employment through its own significance for the psychological well-being of the



worker and the resentment felt by employees towards their employer. Certainly, injury incidence seems a key signal of the respect accorded the concerns of employees in the process of production. None of this is to deny the complexities of the interpretation of injury incidence, which may, for example, as well be a sign of invasive job control practices on the part of organised employees as of a participative employment relationship maintained by consultative management.

Industrial safety has been a recurrent theme in industrial relations. The amelioration of dangers inherent in the work environment was a key aspect of efforts made to humanise work in the later 1960s and during the 1970s. It has been an enduring concern in West Germany and the Nordic countries (e.g. Jurgens et al, 1993; Berggren, 1994). Industrial safety was also a central issue during the Italian strike wave and its aftermath over the years 1968-72, during which workers' concerns shaped to an exceptional extent the agenda of debate and negotiation (Franzosi, 1995). In Britain, the 1970s saw pursuit not only of the Health and Safety at Work Act (HASAWA) of 1974 but of the Safety Representative and Safety Committee regulations by unions otherwise largely hostile to the statutory regulation of the employment relationship (Nichols, 1997).

Following Nichols (1997), this thesis refers not to industrial *accidents* nor *accidents* at work nor work *accidents*, but to industrial, occupational and work *injuries*. The nature of incident is not prejudged, and the full space for social structuring allowed. Attention is confined to injuries, to the neglect of instances of occupational disease, on which cross-national comparative statistics are immensely problematic given the national idiosyncrasies of the range of illnesses acknowledged. There are some potential conceptual difficulties with the delineation of injury and illness, although it seems that the bodies responsible for data collection generally recognise a distinction, sharing an internationally common view of injury as a relatively sudden, acute, debilitation. The US Department of Labor's Bureau of



Labor Statistics terms the incidents on which it focuses its attention ‘traumatic injury’, defining these as acute wounds or exposures resulting from a specific event or a specific set of events in the course of a single working day or shift, and thus excluding the consideration of the longer gestation occupational illness (Toscano & Windau, 1994, 26 n8; Personick & Windau, 1995, 30). Such a definition seems to underlie the injury data collected in all the countries featured in this study, which most often draw an explicit distinction between the acute trauma of injury and the chronic accretion of disease.

This present chapter seeks to provide a sketch of the comparative historical industrial safety experience in the manufacturing sectors of eleven advanced industrial societies over the period 1960-95. The deep reservations expressed by Theo Nichols (1997, 106-7) about the prospects for advancing the understanding of industrial injury through the uncritical use of the international data published by bodies such as the International Labour Organisation (ILO) are taken very seriously. The problems of cross-national comparability in injury statistics typically leap out of tabulations and charts dealing with the injury experience of several nations (e.g. OECD, 1986, Table 15.1). Issues of meta-data (see Eurostat 1997a); of the meaning of data categories, are crucial in the area of industrial injury.

Though beginning with the figures published by the International Labour Organisation (ILO), the present study makes much use of national statistical sources. Whilst the ILO figures are the benchmark employed, painstaking attention is given to the meaning of the data submitted to the ILO by the responsible national bodies by exploring the nature of the domestic official statistics on which these submissions depend. As Nichols (1997) implies, any meaningful comparative analysis of injury experience must determinedly confront these data issues in depth.

Ultimately, statistical submissions to international agencies such as the ILO depend on the statistics collected at a national level for internal purposes. For the majority of the



countries considered here, national official injury statistics are based principally, and most often exclusively, on the information collected under social insurance arrangements. Any comparative historical treatment of the statistics thus relies substantially on the comprehensiveness and continuity of such arrangements as they have applied to employees in manufacturing.

### **Official statistics on injury.**

#### Early emergence of industrial injury benefits.

Flora & Alber (1981, 50) note that social insurance for work related injury tended to emerge early in Western Europe, generally preceeding the social insurance programmes instituted for sickness and unemployment, as well as the introduction of old age pensions. Social insurance against work-related injury was introduced first in Germany and Austria(-Hungary) in the 1880s (Wilensky, 1975). By around 1900 each of the eight European countries treated by the current study had introduced a workers' compensation scheme, and by World War I each had extended these schemes to cover a majority of manual employees, with the extension of the arrangements to the excluded groups of employees completed between the wars in most cases (Flora & Alber, 1981, 52; Table 2.4; Rabinbach, 1996, 54; Olsen & O'Connor, 1998, Table 1.1). By 1950, the extensive social insurance programmes which had developed included *compulsory* injury insurance arrangements in each of the European nations treated here (Flora & Alber, 1981, 54).

Table 1 below, adapted from Flora & Alber (1981, 74: Table 2.7) shows the approximate extent of the coverage of compulsory social insurance against injury amongst

the entire economically active population by 1960, the departure point for the present study, and in 1970.

| Year |  | Germany | Austria | Norway | Finland | France | Italy | Sweden | UK |
|------|--|---------|---------|--------|---------|--------|-------|--------|----|
|      |  |         |         |        |         |        |       |        |    |
| 1960 |  | 92      | 94      | 76     | 56      | 65     | 66    | 76     | 92 |
| 1970 |  | 98      | 94      | 77     | 75      | 80     | 65    | 74     | 93 |

Table 1. Workforce coverage of social insurance against work-related injury in Europe.

Although the coverage is more limited in some countries, particularly in 1960, the evolution of the systems, originating with workmen's compensation directed specifically at industrial occupations, should be borne in mind. It seems unlikely that many manufacturing employees were excluded even from compulsory arrangements even as early as 1960 – the excluded are more likely to have been workers in the service and agricultural sectors, as well as the self-employed and perhaps some of the unemployed (see Flora & Alber, 1981, 52). Only in Italy does it seem that any manufacturing employees were excluded from compulsory arrangements, and indeed continued to be so, under a system which does not cover white collar employees unless they are regarded as being specifically exposed to risk. Coverage of manufacturing employees in Italy does thus at least seem to have been consistent over time.

Although the three non-European nations spanned by this study do not feature social insurance schemes with the extensive pedigree of those in Europe, they do nonetheless have quite deep historical roots. In Japan, Work Accident Compensation Insurance (WACI) was first established in 1911 by the Factory Law, and subsequently consolidated and extended by



the Labour Standards Law of 1947 (Wokutch, 1992, Table 4-3). Workers' compensation provision in North America was also well established by 1960. In the US, work-injury benefits were introduced in several states around 1911, and perhaps 30% of the workforce was covered by state worker compensation by the outbreak of World War I (Wilensky, 1975, 9; Kudrle & Marmor, 1981, 82; Rabinbach, 1996, 55). In Canada, provincial schemes began to appear around 1908 (Olsen & O'Connor, 1998). A compulsory scheme of social insurance against industrial injury was instituted in both the US and Canada in 1930, with the schemes covering three-quarters of the labour force by the mid-1950s (Kudrle & Marmor, 1981, 82-3).

There is thus much reassurance in the early emergence and initial sectoral focus of nations' injury insurance programmes that the workforce coverage of the injury statistics in manufacturing is consistently comprehensive from 1960, though it does seem clear that at least some white collar workers in Italian manufacturing have never been covered. However, the injury statistics available for the UK and the US are, as we shall presently see, exceptional in their lack of direct dependence on the information collected under social insurance arrangements, so that such considerations are of less immediate relevance in these national cases.

### **Injury statistics and the significance of fatal injury records.**

The bodies responsible for the collation of the statistical representation of injury experience typically decompose the incidence of injury according to its severity. These categorisations vary by country. At best, the decomposition available in domestic publications might distinguish injuries which do not involve any lost work time, injuries which result in 3 or 4 days away from work, 'serious' or 'severe' injuries such as fractures, 'serious' or 'severe' injuries causing various degrees of permanent or semi-permanent



incapacity, such as amputations, and fatalities. At first sight, such decompositions, which are to some extent reflected in the various figures on injury incidence published in the ILO Yearbooks, seem to offer rich opportunities for statistical analysis. Yet this glosses over the comprehensiveness of the statistics available as gauges of the extent of actual incidence of these various categories of injury.

Comments on the comprehensiveness of notification of that injury, in principal, subject to recording in European nations have been hazarded recently in the early stages of the Eurostat (1997b; 1998) work on industrial injury in the EU15. Though it is hoped in time to harmonise the statistical collection systems throughout the Union, the Eurostat work currently relies exclusively on the figures collected under the auspices of the national authorities. Remarkably, most of these bodies express an absolute confidence in the national official statistics on occupational injuries of all degrees of severity. The national bodies responsible for collation in nine of the fifteen member states assured Eurostat (1997b, 4) that notification of recordable injury under the current arrangements was 'exhaustive'.

However, profound problems arise from the complexity of the social construction of the official statistics available on non-fatal injury. Grunberg (1986) seeks to use plant level injury statistics to compare the safety performance of Peugeot's British Ryton and French Poissy facilities. He finds, however, severe difficulties in the interpretation of the recorded figures. Variations in definition and recording practice are apparent over time even in the short span of years he considers, and perhaps even more so across the two plants, even within the bounds of this single multi-national company. This leads Grunberg (1986) to profound scepticism about the possibility of meaningful quantitative cross-national comparison with all recorded injury statistics at any level of aggregation.

The reporting of relatively minor injuries seems more likely in an environment in which workers feel more secure in their position, so that an extensive record of more minor



injury may be an expression more of the self-assurance of employees than of perilous working conditions. Clearly, the seriousness with which employers' regard their duty to report injury is also critical, with systematic arrangements encouraging comprehensive records. Conversely, a low rate of recorded minor injury may be more an expression of the flippancy with which injury is treated by managers, and of the vulnerability felt by individual employees than of the safety of the working environment, just as Berggren (1993: 1994) suggests. In all this, the attitude of other employees to the issue of injury may play a role at least partially independent, with peer pressure either encouraging the pursuit of proper injury records, or inhibiting it.

In this context, the confidence in recorded injury expressed to Eurostat by the bulk of the national responsible bodies is grossly misplaced. Their complacency is, however, implicitly shared by a small number of academic authors, such as Fairris (1998), who presents an analysis of developments in industrial safety in the US manufacturing sector over the period 1946-1970. Fairris argues that the figures for the frequency of occurrence of injury resulting in work absence published by the Bureau of Labor Statistics over this period, before the regulatory innovations of the 1970s, provides an accurate impression of movements in industrial safety. He disregards the possibility that the shifts in shopfloor governance which are the focus of his discussion may not only shape injury experience, as he argues, but shape also the very recording of injury, regardless of specific government initiatives. Such problems of differential and uncertain recording of injury in general are of course compounded in comparative historical work.

It does indeed seem impossible, with regard to total recorded, or 'all recorded', injury, to extricate the actual injuries sustained from the intrinsically political process of reporting and recording, as is stressed by those scholars with an established expertise in the area (Wokutch, 1990; 1992; Berggren, 1994; Nichols, 1997). It is widely accepted by such



academic analysts that there is a vast underreporting of non-fatal, and particularly the relatively minor non-fatal, injuries. There is as yet, however, no analysis of the extent of this under-recording either within or across nations. Moreover, the categorisation of non-fatal injuries employed by different national official statistics varies very considerably, undermining still further the possibilities for meaningful cross-national comparison of non-fatal industrial injury experience. All this makes any assessment of the distortions introduced into comparative historical analysis of non-fatal injury by recording practice impossible.

Whilst the early work by Eurostat (1997b) shows that the national authorities responsible for the area tend to regard national official statistics on non-fatal injury as very much more comprehensive than do comparative researchers, there is more agreement concerning the notification of fatal injury. Graham Stevens (1992, 632) of the British Health and Safety Executive (HSE), referring to the detailed HSE (1991) comparative study of several European nations, asserts that 'fatalities are fully recorded' in France, Germany and Great Britain. The perception that the figures on the numbers of fatally injured relate very closely to the actual number of fatal work injuries on the national definition is widely shared across government agencies and academia (e.g. HSE, 1991; Wokutch, 1990; 1992; Eurostat, 1997b; Nichols, 1997).

Amongst the national bodies of those countries discussed here, only those of the UK and Sweden did not express a thoroughgoing confidence in all official figures on industrial injury to Eurostat (1997b), but these bodies commented that it was non-fatal injury - not workplace death - which were under-recorded. A unique attitude was however taken by the body responsible for one member of the EU15 not treated in the present study. The utter lack of faith of the Ministry of Labour of the Netherlands in the nation's official national occupational fatality count reported by the HSE (1997, 7) is exceptional in the advanced



industrial world. The acknowledged inadequacy of the data for the Netherlands relates to the absence of both specific industrial injury compensation scheme and any other established system of notification (European Foundation, 1986, 24; 28).<sup>iii</sup>

In summary, the argument put by Raoul Jay, during a debate in the French Chamber of Deputies in 1900, that recorded fatalities are critical in the assessment of the perilousness of work, has resonance with the more recent past. Jay argued that recorded fatalities were much the best indication of industrial safety experience, subject as were records of other injury to the propensity of employees to report and to the interpretations of companies, tribunals and doctors (Rabinbach, 1996, 65). Whilst across the advanced industrialised nations as a whole, and across their manufacturing sectors specifically, relatively few are touched by industrial fatality, it may yet have a broader significance. Just as actual injury incidence in general may be taken to express something of the employment relation more broadly, so fatalities specifically, on which the available statistics seem much more adequate, may be taken as some indication of the broader experience of work.

However, the depiction of industrial safety provided by the pattern of fatal injury incidence is necessarily partial. Even in principle, without regard to the precise meaning of official death tolls, death rates should not be regarded as expressing perfectly even industrial health and safety performance more generally. It may well be that some production systems, and some national systems, are prone to an injury profile skewed more heavily towards less serious, but still profoundly debilitating, injuries. These ‘minor’ non-fatal injuries, sustained in the very attempts of workers under extreme pressure to keep production going, may indeed be of long gestation, more akin to occupational disease. Thus it has been suggested by a number of researchers that the very intensity of the drive for fat-free and uninterrupted production under lean systems may foster repetitive strain injury (RSI), otherwise known as cumulative trauma disorder (CTD), whilst encouraging management to avert the severe and



fatal injuries which have an immediate disruptive impact on production (e.g. Berggren, 1994, 52-3).

### **Conceptions of fatal injury.**

The broad acceptance of the close relation between the official death tolls published in advanced industrial countries and the phenomena the data purport to gauge, of course neglects the vital issue of the cross-national comparability of fatality data collated under different national regimes utilising national conceptions of what constitutes a fatal industrial injury. Since national reporting systems, methods of collation and relevant industrial classifications have tended to change relatively little since 1960, many of them being well established by the 1950s, we can have more faith in the description the data provides of the development of the various nations' manufacturing fatality experience over time. Even Nichols (1990; 1997), so sceptical of the promise of studies of injury drawing on the aggregate official statistics collated by international bodies, takes data directly from the ILO in the course of his comparative commentary on the *trends* in fatality experience. The determination of meaningful benchmarks for the countries - vital for the construction of (continuously) comparable time series - is the more problematic task. Progress can be made in this area with careful reference to national sources, practices and commentaries, and with certain riders and caveats.

The HSE (1991, 35; 50; 65) found in its exploration of the functioning of the social insurance systems of France, (West) Germany and Italy, that there are quite generally considerable efforts made to establish an unquestionable link between a fatality and an incident at work. This implies, for example, that victims of fatal heart attacks at work are not considered to have suffered fatal occupational injuries. Similarly, under the rubric of the new US census of occupational fatal injuries, victims of fatal heart attacks occurring at work



do not feature in the published figures (Toscano & Windau, 1993, 46n10). The more general exclusion of such deaths in official statistics on occupational fatalities is apparent not only from such explicit statements, but also from the similarity of the relative order of magnitude of the total death toll recorded in the official sources of advanced industrial nations, and from the broad similarities in the pattern of death across industrial sectors (see e.g. HSE, 1991). Equally importantly, the work related death statistics available for most nations either entirely neglect deaths resulting from chronic disease or distinguish such death sharply from deaths resulting from acute injury. In the cases of some nations, however, care is required in the interpretation of the published statistics. Clearly, the treatment of substantial numbers of deaths resulting from occupational disease as deaths resulting from acute injury could undermine the comparability of the data.

A further aspect of the official national definitions of occupational fatality relates to the length of the period which can elapse between the incidence of the injury and death. The ILO (1999) suggests that, with one exception, amongst the countries under study here deaths may occur at maximum a year after the incidence of injury and still be regarded as work related, with many countries having no temporal cut off. According to the ILO (1999), France is exceptional, with all depending on whether the regional sickness insurance fund settles on a pension before a victim's death. The ILO (1999) claims that this settlement now at least rests on the relevant fund deciding that the condition of the victim has stabilised; that they are unlikely to deteriorate further. It does seem that the issue of the recording of delayed death may be a little more involved than this allows, however.

Death may in principle occur up to one year after the injury was sustained in Great Britain and the injury be recorded as fatal (HSE, 1991, 8), whilst in Italy an injury may be regarded as fatal whatever the period between the incident and death, as long as relatives can satisfy the Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro (INAIL)



that the death was work related (HSE, 1991, 65). At the other extreme an industrial injury is indeed only recorded as fatal in France if death occurs before the determination of a pension. This process generally takes only 2-3 months. However, a study done by the Caisse Nationale de l'Assurance Maladie (CNAM), the principle insurance fund in France, suggested that in 1987 only around 5% of deaths which might be considered linked to industrial accidents occurred after the determination of a pension, however (HSE, 1991, 34). In (West) Germany, where the fatal status of an injury depends as in France on the death occurring before the pension is determined, the process generally takes at least 3 months, and a study showed that 50% of deaths occur within 3 days of an incident, 80% within 4 weeks and very few after the lapse of a year (HSE, 1991, 50-1). These French and German studies suggest that few occupational fatalities are likely to be omitted from any national official statistics as a result of time strictures in the definition of fatal injury, since death tends to occur, if at all, quite soon after an incident.

Deaths resulting from violence at work raise some issues concerning the interpretation of fatality statistics. It is not immediately clear that such death should be regarded as work related, or rather as coincidentally occurring at work, and nor is it clear that all nations treat such death equally in their reparation of injury statistics. In the United States, workplace violence is acknowledged as a major problem. This is apparent in recent statistics on fatal work injury, which show that such violence accounted for around 20% of occupational deaths recorded in the early 1990s (Toscano & Windau, 1993, Table 2; Toscano & Windau, 1994, Table 1). The bulk of these deaths involved the murder of the victim, although around 3% of all deaths, and thus about a seventh of deaths following workplace violence, resulted from self-inflicted injury. In 1993, a year for which a detailed breakdown is published, approximately half of all victims of workplace murder worked in retail and catering, with a further 11% of victims police and security guards and around 9%



taxi drivers (Toscano & Windau, 1994, 18; Table 2). Thus death resulting from workplace violence, dominated as it is by murderous assault, is principally a problem of the service sector. However, it does seem that such deaths now constitute a substantial proportion of fatal injuries in the US manufacturing sector – some 9% of them even by 1993 (Toscano & Windau, 1994, Table 4). Since the bulk of that portion of fatal assault which does not occur in the course of robbery or other crimes involves co-workers or clients (Toscano & Windau, 1994, 18; BLS, 1998, Table D-2), and indeed often supervisors or former supervisors (BLS, 1998, 147), it hardly seems coincidental that such violent assaults occur at work.

Under the relatively recent Reporting of Injuries, Diseases and Dangerous Occurrences Regulation (RIDDOR) of 1995, injuries resulting from workplace assault have become notifiable in Britain. A breakdown of the first available data under the new guidelines presented by the Labour Research Department (1998) shows that although the incidence of workplace violence is thought to have exploded in recent years it is still not an issue in British manufacturing, remaining a service sector phenomenon. The US experience thus seems exceptional, even in the Anglo-Saxon world. A few deaths resulting from assault at work feature in Swedish records for the years 1993-1995, but at their peak these deaths constituted less than 5% of the fatal injuries recorded across *all* industries, compared with the 20% now common in the US.<sup>iv</sup> The total absence of reference to the issue in other nations suggest that any differences in the treatment of deaths resulting from workplace violence can be no major impediment to the comparability of the fatal injury statistics available for manufacturing.

Britain is exceptional in its exclusion from the count of both commuter death and road traffic death occurring in the course of work (see e.g. HSE, 1991).<sup>v</sup> Elsewhere, although commuter and road traffic injuries tend to comprise a small proportion of the total number of injuries of all degrees of severity recorded, they tend to constitute a substantial



proportion of recorded fatal injury (e.g. HSE, 1991; Eurostat, 1997b). Indeed, where, as in (West) Germany, commuter death is considered alongside such road traffic injuries sustained in the course of work as work-related injury, deaths involving road traffic can constitute the bulk of total industrial fatality recorded.

In France, commuter death is generally recorded separately, but the statistics on fatal injury include travel death occurring during the hours of work (e.g. CNAMTS, 1973; 234; HSE, 1991, 35-6). Work-related travel death accounted for around 40% of all fatal injuries across the industrial sector spanned by the principal insurance agency in 1987 (HSE, 1991, Table 1), up a little from the 35% of 1972 (CNAMTS, 1973, 216). In (West) Germany, both commuter death and travel death occurring during working hours commonly feature in published statistics (see, e.g. HSE, 1991, 50). In 1988, excluding commuter death from consideration, work-related travel death comprised around 30% of all recorded work related fatal injury across the economy as a whole (HSE, 1991, 52). These sorts of proportions, with travel death in the course of work comprising 25%-45% of all (non-commuter) fatal injury, are typical, with the Nordic nations tending to be towards the bottom of this range, and Italy towards the top. The clearest evidence of the significance of road traffic and other travel death in manufacturing specifically is that for Sweden in the period 1993-5, when its sectoral share was some 20% of all fatal injury, compared with 30% plus across the economy as a whole.<sup>vi</sup>

Ten of the eleven nations spanned by the current study therefore include travel death occurring in the course of work in the collation of industrial fatality statistics. The necessity of a consistent treatment of road traffic and commuter death to ensure the cross-national comparability of data across the eleven is obvious. There might be fears that the general inclusion of work related travel death could distort the reflection of fatal work injury, with fatal work injury incidence then reflecting to a substantial degree societal road safety. The



OECD (1986, Table 29.1) and the British Department of Transport (1993, Table D) present comparative historical statistics on the incidence of road death per head of population, figures which suggest very wide cross-national disparities in the extent of road traffic death. However, it does not seem that the extent of such death relates at all well to the comparative experience of job-related road traffic fatality. In this context, the inclusion of work related travel death in fatal injury incidence rates cannot be regarded as in any sense distortionary. Of course, this inclusion implies a very particular treatment of the available British statistics, to be elaborated presently.

### **Delineating manufacturing industry.**

Meaningful data on the comparative fatal injury performance of societies depend on consistency in the national notions of what comprises manufacturing. During the second half of the twentieth century, various international organisations have attempted to reconcile and co-ordinate the industrial classifications employed by nations in presentations of official statistics. The 1990 Revision 3 of the International Standard Industrial Classification, ISIC, and indeed the most recent version of the European Union's NACE, distinguish manufacturing activity very sharply from mining and quarrying as well as from wholesale and retail activities. Indeed, the international systems of classification have long facilitated the development of an internationally recognised definition of manufacturing activity.

In general the responsible bodies of the eleven countries under study here employ an internationally recognisable conception of manufacturing in collating data on fatal industrial injuries, or at the very least seek to implement the ISIC system when submitting data to the ILO. There are national exceptions, however, with responsible agencies in some countries submitting injury data to the ILO which is organised according to historic and country specific conceptions of trades and industries which have become institutionalised by their

employment in the systems of social insurance which most often furnish the available data on injuries. There are, moreover, occasional changes in the systems of classification employed by national responsible bodies which owe nothing to the revision of international systems of classification.

It is the differing treatments of quarrying activity by the various national responsible bodies which is of the most obvious significance in this regard, given the quite general experience of a rate of incidence of fatal injury in such activities markedly above that in the transformative industries more conventionally regarded as constituting manufacturing. In the collation of the fatal injury incidence series, substantial effort was thus made to establish the precise industrial coverage of the nations' data on manufacturing, to ensure that industries which are not considered part of ISIC manufacturing did not severely contaminate the figures derived.

### **The composition of manufacturing industry.**

These comments cannot of course touch the issue of the distribution of employment amongst the industries which are regarded as ISIC manufacturing. The examination and analysis of cross-national comparative fatal injury performance with nations' entire manufacturing industries as the unit of analysis might well be thought extremely problematic in certain respects.

The differing compositions of the manufacturing industries of advanced industrial nations raise the question of whether like is compared with like in any such aggregate treatment – whether comparison across countries at this level of analysis is at all legitimate. To some extent these very differences in composition may quite reasonably be considered as part of the phenomena being investigated, rather than being an autonomous factor in the determination of injury incidence for which there should be some specific control.



Moreover, their relevance, even if taken as autonomous, may easily be overestimated. Given the limits of the associations between comparative historical variation in industrial composition and that in union density and strike activity (e.g. Hyman, 1992; Edwards & Hyman, 1994) it seems sensible to be wary of causal conjectures about the relevance of industrial composition to injury incidence. Nonetheless, further consideration of the implications of the composition of manufacturing industry for injury experience promises to contribute something to understanding of comparative developments in the sector.

The assessment of the relevance of the composition of manufacturing to fatality incidence across the sector as a whole is impeded by the fragmentary availability of statistics providing a detailed breakdown of fatal injury experience within manufacturing, showing the relative incidence of fatal injuries across sub-sectors. Nevertheless, various fragments of evidence demonstrate that the relative incidence of fatal injuries across the sub-sectors of manufacturing is not always as one might expect. One example may be drawn from the detailed breakdowns of manufacturing fatalities available for the US from the early-mid 1990s. Over the five year period 1992-6, the US Census of Fatal Occupational Injuries (CFOI) recorded 3745 deaths from occupational injury in manufacturing at a rate of incidence of 3.7 per 100000, whilst the 400 deaths in 'Food and kindred products' occurred at a rate of incidence of 4.6 per 100000, a rate substantially above that for the sector as a whole (BLS, 1998, 45).

A useful partial breakdown of fatal injuries in European manufacturing is available for the EU15 for 1994. Eurostat's (1998) analysis, based on the figures collated under the national systems of the EU15, suggests that 'Food, beverages and tobacco' was the most perilous manufacturing sub-sector of all across Europe in 1994. The 257 fatal injuries recorded in this sub-sector implied a rate of incidence of 9.2 per 100000, a rate a little above the 9.1 per 100000 evidenced in 'Other non-metallic minerals (glass, ceramics, construction



materials)' and much above the 6.2 deaths per 100000 of 'Basic metals and fabricated metal products'. These rates compare with the rate recorded for the manufacturing sector as a whole, sector D under Europe's NACE, of 4.6 per 100000. Though these figures relate only to one year's experience, they corroborate the impression given by the figures for the US of the early-mid 1990s cited above, that lighter manufacturing need not be the safer component.

In this context, the recent US CFOI is of further interest for the detailed breakdown of fatalities in US metal related manufacturing over 1992-6 it offers. The vast majority of those working with metal in the USA, as elsewhere, fall under ISIC (Revision 2, 1968) division 38, 'Manufacture of fabricated metal products, machinery and equipment', with relatively few working in activities falling under ISIC 37, 'Basic metal industries' (OECD, 1997b, Table V). Collating the death tolls presented in BLS (1998, Table A-5) across the broad range of activities corresponding with ISIC 38, and comparing these with labour force statistics on the numbers of employees in this division suggests that over the period 1992-6 the (annual) rate of incidence of fatal injury in fabricated metal products, machinery and equipment was around 2 per 100,000.<sup>vii</sup> This rate, for those activities constituting the bulk of employment in metal related manufacturing, and indeed more than 40% of all manufacturing employment in the US, is just over half the rate for the manufacturing sector as a whole.

In this period, 1992-6, around 760 thousand employees worked in the basic metal industries; iron and steel and primary non-ferrous metal, the branch where it might be thought likely there would be a particularly high incidence of fatal injury. This constitutes less than 4% of total manufacturing employment in the US at the time.<sup>viii</sup> Comparison with the fatality tolls (for both employees and the self-employed) of the CFOI (BLS, 1998, Table A-5) for 'Primary metal industries' suggests that over the period 1992-6 the rate of incidence of fatal injuries in basic metals was more than twice that in manufacturing as a



whole, at 8.3 per 100000 employed.<sup>ix</sup> Thus, recent detailed figures for the US suggest that for those few working in the very heaviest of heavy manufacturing; basic or primary metals, the incidence of fatality is indeed greater. This is in stark contrast to the relative safety of the bulk of metal related activities in the US.

There is some evidence that the forestry based industries of manufacturing tend to be particularly perilous. The US CFOI shows that over the period 1992-6 there were 1018 deaths in 'Lumber and wood products', occurring at an incidence rate of 27.3 per 100000, seven times the rate evidenced in the manufacturing sector as a whole (BLS, 1998, Table 2). The partial breakdown available for the EU15 suggests that European forestry manufacturing is not generally as perilous as the US census data suggests. In 1994, the 56 deaths which Eurostat (1998) records for 'Wood and wood products' occurred at a rate of incidence of only 4.8 per 100000, a rate only marginally above the 4.6 per 100000 recorded for European manufacturing as a whole.

NACE classification suggests, however, that this may largely be a result of the nature of the European designation. In contrast to US practice under the CFOI, the European classification of industrial death seems not to separate furniture production from other wood related manufacture. The incomplete breakdown of fatalities available for Europe apparently uses the term 'Wood and wood products' in the sense it is employed under NACE, to span all the activities covered by ISIC 33, thus including furniture. Since furniture manufacture tends to be rather less perilous, this categorisation pushes down the rate derived for the more broadly defined European branch. Moreover, since the European lumber and wood industry is relatively limited, and figures on it are available for only one year, a 'small numbers' problem may be effecting the incidence rate presented for wood related manufacture in Eurostat (1998).



The experience of Finland, where the forest industry has been central to industrial developments, and is still a major employer, is of interest in this context.

A detailed breakdown of fatal injuries based on ISIC Revision 3 is available for Finnish manufacturing in the early 1990s.<sup>x</sup> Between them, over the two year period 1992-3, 'Wood and wood products manufacture' and 'Pulp, paper and paper products manufacture' featured a rate of fatal injury of 0.033 deaths per million hours worked, compared with a rate for manufacturing as a whole of 0.017 per million hours worked (derived from Statistics Finland, 1997a, Table 337). None of the other manufacturing activities distinguished in the source showed a greater rate of death in Finland in these years.

With regard to the broad issue of industrial composition, there have been some attempts to gauge the significance for injury experience of the presence of heavier manufacturing industry in studies comparing a small number of countries having manufacturing sectors of differing complexions. The HSE's (1991) comparative study seeks to pursue West German-British comparisons by 'correcting' the higher rates of incidence derived for West Germany for the comparatively heavy nature of its manufacturing. The British system of industrial classification allow the partitioning of manufacturing into 'heavy' and 'light' industry, based essentially around the distinction between SIC2/3 (mineral extraction, metal manufacturing, chemicals, engineering) and SIC4 (food, drink, wood products, clothes and miscellaneous production). The German system permits a similar procedure. HSE (1991, 58-59) shows that adjusting for the composition of manufacturing using this heavy-light distinction accounts at most for 10% of the difference between the German and British manufacturing fatal incidence rates which the HSE derives. At least this crude adjustment for the difference in the industrial composition of the two countries' manufacturing sectors, then, accounts for little of the difference in fatal injury incidence between them.



In general, whilst the fragmentary evidence thus suggests that some very specific elements of manufacturing industry seem, on average, substantially more perilous, there seems little evidence indeed of inherent incidence differentials between these activities and the broader manufacturing experience. In any case, the extent of employment in such activities is surprisingly limited; certainly, there is no general relation between heavier manufacturing and fatal injury. There thus seems little suggestion that differing national compositions of manufacturing have necessary implications for sectoral fatality experience. Of course, many other issues remain to be considered in establishing meaningful cross-national comparisons of fatal injury experience.

### **Establishing comparability.**

Whilst in many areas commonalities in national treatments of fatal injury amongst the leading industrialised countries under examination here are clear, many nation specific issues of relevance to any effort to assemble comparable data arise. Whilst the ILO Yearbooks publish statistics on rates of fatality from 1960, and raw death tolls from the mid-1970s, their basis is far from clear. Detailed considerations on the nature of the fatality statistics available for the eleven countries, and on the procedures adopted in the pursuit of comparability of the data finally derived, are essential to establishing cross-nationally comparable data on the rates of incidence of fatal injury per 100000 employed for these various nations' manufacturing sectors. For those nations for which these considerations are more involved, the commentary is necessarily lengthier. In the cases of some nations, qualifications and uncertainties as to the cross-national comparability of the data which can be assembled are noted.

## West Germany and the new Germany.

As the HSE (1991, 49) note in their examination of West German occupational injury statistics for the late 1980s, the figures available relate to the insured employed. All employees must be insured by law through their employer's membership of the social insurance scheme, whilst in the mid-1980s around two thirds of all non-agricultural self-employed were registered with associations (HSE, 1991, 50; Halbach et al, 1992, 449). Given the very small share of self-employment in manufacturing and the substantial presence of the self-employed in industry's insured working population (HSE, 1991, Table 1), it is likely that almost all those employed in West German manufacturing are in practice covered by the published statistics, just as the HSE (1991, 49) suggests.

The social insurance origins of the figures available shape the industrial decompositions of injury experience possible, meaning that a toll for manufacturing must be approximated from injury incidence in numerous historic industrial divisions – the Berufsgenossenschaften (BG). These now number 35 across the industrial sector as a whole, of which some 17 feature manufacturing activities (see e.g. Halbach et al, 1992, 455-456; HSE, 1991, Table A1). Since, as the HSE (1991, Table A1) shows, the nature of the social insurance system implies that the death toll for manufacturing which may be assembled from BG statistics necessarily includes some deaths which occurred in the wholesale and retail meat trade and in hotels and catering, and manufacturing is typically conceived in a manner which also includes open cast quarrying and oil extraction, the derivation of rates of incidence of injury comparable with those in other nations' manufacturing sectors is problematic.

The least troublesome aspect of the problem is the issue of what labour force data should be employed in the derivation of rates. Yet the selection of a suitable employment



series is not straightforward, in part as the basis of figures published in various alternative sources is unclear. The 31.8m figure for total employment across the economy as a whole in 1988 suggested by the HSE (1991, 58: Table A2), on the basis of the numbers insured to work, exceeds by some 3m even the total (of 28.8m) estimated in West Germany's Report on Accident Prevention (see Halbach et al, 1992, 508), which was, presumably, itself estimated using the BG social insurance records. Moreover, the HSE total is vastly above the OECD (1996a) figure for employment in West Germany in 1988, of 26.8m, exceeding it by some 5m. Thus it seems clear that the figure for total employment cited by the HSE constitutes an overestimate.<sup>xi</sup>

Turning to employment in manufacturing specifically, the total derived by the HSE for 1988, of 11.6m, exceeds that recorded by the OECD (1996a), 8.5m, by more than 3m. In the light of the sectoral employment registered in OECD (1996a) for ISIC Division 2 (Mining and quarrying), 0.2m, and ISIC Division 6 (Wholesale and retail trade; restaurants and hotels), 4.4m, it is inconceivable that this huge discrepancy could be considered the result simply of an HSE allowance in its labour force data employment in the wholesale and retail meat trade, in hotels and catering, and in open cast quarrying and oil extraction. For this to be the case, these specific groups of employed would have to account for almost two-thirds of those employed under ISIC Divisions 2 and 6 combined – a clear impossibility. Intensifying the confusion, the HSE employment statistics (1991, 58: Table A2) suggest that employment in German manufacturing exploded from 10.7m to 11.6m over 1987-8, thus increasing by approaching 10% at a time when OECD (1996a) suggests an incremental growth of less than 1%. The only conclusion from this seems that the sectoral tolls constructed by the HSE (1991, 58: Table A2) from BG records, and employed in the HSE derivation of fatal injury incidence rates, should be regarded with caution.



In the context of the difficulties presented by West Germany's historic industrial classification, and with regard to the efforts made by the HSE (1991) to derive relevant employment statistics, but also to the obvious shortcomings of these efforts, the HSE's estimate of employment in manufacturing in 1987 is used here as a benchmark for the relevant labour force. OECD (1996a) statistics on employment in ISIC manufacturing were then used to project employment in manufacturing as it might be approximated on a German basis. The series thus derived for the purposes of the present study embody a generous treatment of fatal injury performance in West Germany, since it implies that very nearly half of all those employed in ISIC Divisions 2 and 6 are employed in the quarrying and oil extraction, hotel, catering and meat trade activities left indistinguishable from ISIC manufacturing activities in West Germany's sectoral fatal injury statistics.

Of course, the problems posed by the traditional industrial classification are not limited to the selection of the appropriate labour force series. The inclusion in the death toll for manufacturing of deaths occurring in activities considered non-manufacturing under international classifications muddies the interpretation of the fatality rate derived. The exaggeration of manufacturing fatal injury incidence by the deliberate inclusion of deaths occurring in the generally perilous quarrying industry is, however, likely to be offset by the unavoidable contribution of the rate of incidence in the generally relatively safe hotel and catering, wholesale and retail meat trades.

In 1987, employment in ISIC Division 2 (Mining and quarrying), which encompasses more activities than does the BG which contributes to the manufacturing death toll, employed only 0.2m. French figures suggests that incidence in quarrying is very unlikely to be at a rate exceeding five times that in ISIC manufacturing (see CNAMTS, 1973, 67). The HSE (1991, 52) reports that the rate of incidence in German retail and administration was less than half that in manufacturing in 1988. The HSE manufacturing



employment figure for 1987 suggests that 2m employed in wholesale and retail are unavoidably considered a component of manufacturing in the derivation of fatal injury statistics. Even taking the highest rate of incidence in quarrying likely judging by the French experience, and taking employment in the quarrying BG to constitute the entire employment in ISIC Division 2, these figures suggest that, in 1987, the implications for the manufacturing incidence rate of the treatment of quarrying as a manufacturing activity are more than offset by the implications for the manufacturing incidence rate of the treatment of a swathe of service activities as manufacturing activities.

Moreover, the reports of the Federal Minister for Work and Social Affairs show that even in the early 1960s, when its contribution to the West German manufacturing toll was greatest, quarrying and oil extraction contributed less than 10% of the deaths registered in the manufacturing sector on the German industrial classification (Der Bundesminister für Arbeit und Sozialordnung, 1958; 1960; 1964; 1967; 1969a; 1969b; 1971; 1973; 1974; 1977). This is in line with the 1987 contribution of such death implied from various sources above, confirming that the inclusion of quarrying in manufacturing, when taken alongside the inclusion of a swathe of service sector activities, did not inflate the rate of incidence of fatal injury apparent for manufacturing even in the early years covered by this study.<sup>xii</sup>

The issue of the conceptualisation of occupational fatality underlying the German counts remains. From comparison of the ILO toll for the whole economy with the tolls and breakdowns by cause of death presented firstly by the HSE (1991, 52, Tab 2), but also in Der Bundesminister für Arbeit und Sozialordnung (1986; 1987), and indeed with the total tolls presented in the annual Statistical Yearbooks of the Federal Republic (Statistisches Bundesamt, e.g. 1988) which include deaths from occupational disease, it is clear that the statistics presented for West Germany by the ILO feature deaths resulting from commuter



incidents, as well as those resulting from travel in the course of work, whilst excluding those deaths from occupational illness which are recognised under social insurance arrangements.

Some efforts have been made in comparative studies to take account of the inclusion of commuter death in the statistics for Germany, but these are not altogether satisfactory.<sup>xiii</sup> Fortunately, the early publications of Der Bundesminister (1958; 1960; 1964; 1967; 1969a; 1969b; 1971; 1973; 1974; 1977) allow an assessment of commuter death in West Germany relating specifically to those activities typically represented as manufacturing industry. Half yearly breakdowns of the extent of commuter death in the BG taken as manufacturing show that, for the sector as it is normally conceived in West German fatality statistics, the proportion fluctuated between 40% and 45% over the period 1957-1976.<sup>xiv</sup> In this context, and in the absence of a complete annual series of the extent of commuter death in the manufacturing sector as it can be approximated from the BG, the rates of incidence derived from the fatality tolls appearing in the ILO Yearbooks were reduced by a constant 45% in each year, for the purposes of the present study. This estimation procedure errs a little on the side of understating the relevant German fatal injury incidence rate.

Dramatic movements in the extent of recorded fatality are apparent in the 1990s. Halbach et al (1992, 456) note that, at least in principle, social insurance for injury was applied to the entire territory of the new Germany from January 1991. However, further comment is warranted by the peculiar pattern of experience of fatal injury apparent from ILO statistics for the 1990s, and particularly by the plateau of 1992-3, when the tolls were remarkably high. Although the ILO Yearbook of 1998 suggests that the tolls presented for 1991 onward relate to the unified Germany whilst those for earlier years relate to the former West Germany, there is no leap in the number of deaths apparent in the statistics for either manufacturing or the total economy for 1991. Moreover, the same numbers as those in the ILO Yearbook of 1998 featured for the years 1991-3 in the ILO Yearbook of 1996.



annotated as relating exclusively rather to the former West Germany, just as had the statistics for the earlier years presented in the table alongside them.

There is thus some room for confusion about the territorial coverage of the fatality statistics presented in the ILO Yearbooks for the years from 1991. The leap in the ILO tolls dating from 1992 raises further questions. The fatality incidence rates published in the ILO Yearbook of 1996 do seem to resolve the puzzle, however, showing as they do a slump in the rate in 1991 (with an increase thereafter) which suggests that the stable toll for this year was taken in Germany as reflecting the experience across all of the new Germany, with labour force data selected accordingly. It thus seems that there was a simple mis-tabling of the German tolls for 1991-3 in the ILO Yearbook of 1996.

The Statistisches Bundesamt (1993, Table 19.3.2; 1995, Table 19.3.2) presents occupational death tolls for the whole economy, which, in contrast to the ILO tolls, include deaths resulting from recognised occupational illnesses, but which are unequivocally annotated as relating to unified Germany from 1991, which also suggest a leap in the extent of death not in this year but in 1992. The tables do suggest that the total number of all occupational injuries and illnesses recorded did leap in 1991, however, in a manner which strongly suggests that Western German social insurance was indeed applied to the entire country from this year, and by implication that the fatality tolls include the experience in the Neue Lander from 1991.

It seems most likely that the peculiar pattern of fatalities apparent from 1991 is related to delays in the compensation of injury.<sup>xv</sup> It seems most probable that the numbers of compensated deaths acknowledged in 1992 and 1993 include many deaths which occurred in the eastern part of Germany at the time of the process of unification in 1991, with the toll for this year correspondingly lower as those in the East began to become aware of their entitlement under the former West's compensation system and as this system developed the



procedures for processing Eastern claims of the complexity of those for fatalities. This scenario helps to account for the appearance of plateau of recorded death over 1992-3 which then fell away. In the light of all this, the fatality tolls appearing in the ILO Yearbook in the present study were taken as relating to the unified Germany from 1991 onward, with employment figures for the new Germany (OECD, 1997b) used accordingly in the derivation of the incidence rates for these years.

In summary, though it is tortuous, rates of incidence of acute fatal injury for first West German, and then unified German, manufacturing which are internationally comparable are obtainable from the ILO Yearbooks, with the aid of domestic sources. In various ways, the derivation for present purposes here has been rather generous in its treatment of the recorded German industrial safety experience. It is fair to conclude that the fatal injury rates thus derived for West Germany are the most optimistic which might reasonably be derived from the materials available, representing lower bound estimates of the severity of fatal injury experience in the country. This approach was taken with the oft heard celebration the West German, now German, system of industrial relations very much in mind (see, e.g. Streeck, 1992). The derivation sought to avoid granting any leverage to those who might suggest that any failings in German industrial safety implied by the statistics obtained here were simply a statistical artefact wrought by an overly strict, or even partisan, treatment of the available quantitative evidence. As it turns out, the rate derived for manufacturing in 1988 by the procedure here is, on reasonable assumptions about the extent of travel death in the course of work which the HSE (1991) exclude, closely comparable with that suggested by the fatality benchmark derived by the HSE for this year.<sup>xvi</sup>



France.

Figures for the total number of fatally injured registered by the principal social insurance fund, the Caisse Nationale de l'Assurance Maladie (Travailleurs Salaries) (CNAM(TS)), which covers almost all non-agricultural industrial activities, with the exclusion of rail travel (HSE, 1991, 33), are published in Statistique Publique/INSEE (1997, Tab C.02-8). CNAM injury statistics relate exclusively to employees (HSE, 1991, 33). Judging by the lack of mention of the issue in HSE (1991), and by the dramatically skewed distribution of deaths between CNAM and the other more minor insurance funds, it seems that CNAM covers the employees of state enterprises in manufacturing (see HSE, 1991, 33; Appendix 1), an issue of even greater importance in the period following the nationalisations of the early 1980s (see e.g. Goetschy, 1992).

The annual totals presented in domestic sources for 1988-1994 exclude the deaths of commuters (Statistique Publique/INSEE, 1997, 148). These totals correspond exactly with the total number of fatalities quoted by the ILO Yearbooks across the idiosyncratic classification of *industrial* (non-agricultural) sectors featured. Where figures on commuter death are presented in national sources, they are presented separately (e.g. CNAMTS, 1973, 234), and clearly do not feature in ILO figures.

Similarly, the raw toll of 1004 deaths across all CNAM industries in 1987 cited by the HSE (1991, 35 Tab 1) accords with the total across the breakdown of non-agricultural activities presented in the ILO Yearbooks for that year. It is clear from the discussion in HSE (1991), and indeed from CNAMTS' comments and separate presentation of data on illness and presentation of a breakdown of deaths from injuries by material agent (e.g.

CNAMTS, 1973, 216), that the French fatal injury data, to which the ILO tolls obviously relate, record acute injury only, excluding deaths resulting from occupational disease.

The CNAM tolls include those dying in 'vehicle related', or travel, incidents in the course of work (HSE, 1991, 36; CNAMTS, 1973, 67). The inclusion of such deaths in ILO tolls, and the limited nature of the HSE adjustment of French domestic statistics can be confirmed by comparison of the figure for manufacturing recorded by the ILO for manufacturing in 1987, 290 deaths, with that derived by the HSE (1991, 37 Tab 3), 183 deaths. The magnitude of the discrepancy, 36% of the ILO manufacturing total, is consistent with the extent of vehicle related death described by the HSE (1991, 35 Tab 1), 42% of all CNAM deaths, and seems to reflect little, if anything, else.

It thus seems that the classification of CNAM branches underlying the rate the HSE (1991) study derives for French manufacturing relies very heavily if not exclusively on the system of apportionment of injuries already employed by CNAM statisticians in their submissions to the ILO. The HSE suggests that the principal classificatory problem is that the established French tolls for manufacturing feature deaths in food distribution (HSE, 1991, 38). A careful examination of the composition of the industrial branches employed by CNAMTS (1973) shows that the inclusion of non-manufacturing activity extends further. Consideration of this is vital in understanding the implications of the French industrial classification for the tolls presented for manufacturing industry in various publications, and indeed for the assessment of the appropriate labour force figures to employ in the derivation of incidence rates.

The CNAMTS (1973) breakdown of the composition of the 'grandes branches d'activites' 01 and 03-11 which the HSE treats as constituting French manufacturing (HSE, 1991, 41), suggest that the HSE figures for manufacturing relate in substantial part to industrial activities which would not be recognised as aspects of manufacturing under



international classifications. Table 2 below details the inclusion of non-manufacturing activity in the branches taken by HSE to constitute French manufacturing. The HSE commentary implies that it is impossible to delineate the fatal injuries occurring in these components of the CNAM branches from deaths in transformative manufacturing activity, and thus that the data submitted by CNAM to the ILO necessarily involves a conception of manufacturing which is to an extent at odds with the ISIC.

|    |                     |  |
|----|---------------------|--|
| 01 | Metal               | importation of new cars  |
| 03 | Timber              | wood trade (wholesale & retail)  |
| 04 | Chemical            | extraction of oil/gas; wholesale liquid fuel/lubricants                  |
| 05 | Stone, clay, glass  | extraction of (non-metallic)minerals (open cast & underground quarrying) |
| 06 | Rubber, paper, card | -  |
| 07 | Books               | -  |
| 08 | Textiles            | -  |
| 09 | Clothing            | laundry (wholesale & retail)   |
| 10 | Leather and skins   | wholesale rawhide; fur/coat trade (wholesale and retail)                 |
| 11 | Food & food trade   | food & drink trade (wholesale and retail)                                |

Table 2. Non-transformative industries in French ‘manufacturing’.

Thus French manufacturing as taken by the HSE (1991) includes a number of non-transformative activities, as does, it seems clear, manufacturing as delineated by CNAMTS in their submission to the ILO. It seems reasonable to expect an inflation of manufacturing fatalities by inclusion of the quarrying activities which feature in Branch 05, with their likely

heavy fatality incidence. In 1972, Branch 05 'Pierres et Terres a Feu', which accounted for about 5% of employment in French manufacturing as it was defined by the HSE, accounted for 105 deaths (of 824, i.e. 12.7%) at a rate of incidence of 39 per 100000, a rate three times the 13 per 100000 obtainable for HSE defined manufacturing as a whole at the time (CNAMTS, 1973, 67). The bulk of these Branch 05 deaths must be due to quarrying activity.<sup>xvii</sup> The calculation for the early 1970s suggests that the overstatement resulting from the inclusion of the relatively few quarrymen seems very unlikely to ever exceed 10%, hardly severe.

Of course, it is not only these workers whose experience features in what is regarded as manufacturing within France, and indeed by the HSE (1991). For the purposes of their study of injury incidence the HSE regard 5.2m wage and salary earners as being employed in French manufacturing industry in 1987. OECD (1996a) labour force statistics suggest a figure of 4.4m wage and salary earners in French manufacturing under ISIC Revision 2 in 1987. The discrepancy, of 0.8m, seems quite consistent with the inclusion in the HSE estimate of many workers in wholesale and retail and in quarrying in the light of OECD data showing 2.7m wage and salary earners employed in Major Division 6 (Wholesale and retail trade; restaurants and hotels) and 0.1m wage and salary earners employed in Major Division 2 (Mining and quarrying) in 1987. Particularly in the light of the German experience, the limited inflation of the fatality rate resulting from the inclusion of quarrying activity in the operationalisation of the notion of manufacturing industry seems likely to be offset by the inclusion also of so many employees in wholesale and retail (in Branches 01, 03, 04, 09, 10, 11) where fatality rates tend, historically and cross-nationally, to be relatively low.

Moreover, this discussion suggests that the HSE (1991) count of manufacturing wage and salary earners is reliable as a reflection of the numbers of workers in the sector as it may be approximated from CNAMTS branches, and as it must thus be defined in the



CNAMTS submissions to the ILO. In this context, the relatively constant ratio of the CNAMTS based manufacturing employee count presented in the HSE (1991) to the OECD (1996a) manufacturing employee count (1.18 over 1978-1987) was used to project backwards and forwards a CNAMTS based count of wage and salary earners using OECD data. This workforce series was used in the derivation of manufacturing fatal injury incidence rates from the tolls published by the ILO.

The absence of any sharp jumps in the ILO data available on the number of deaths in France, together with the consistency of the statistics published in ILO Yearbooks with overlapping coverage, reinforces the impression given by the consistency of the commentary of the HSE (1991) with CNAMTS (1973) that the basis of the statistics on fatal injuries in France appearing in the ILO Yearbooks was unchanged right through the period 1976-95 during which figures on the numbers of dead are available. Similarly, there are no leaps in the incidence rates cited in the ILO Yearbooks. This is despite the extensive uneven, contradictory, and sometimes obviously mistaken annotation to the French data featured in the earlier ILO Yearbooks, and more surprisingly in the most recent. These difficulties culminate in a reference in ILO Yearbook 1996 to Major Division 10, which exists in neither the ISIC Revision 2 under which the data are apparently presented, nor under ISIC Revision 3, nor indeed in either European NACE system or in the French CNAM system itself.

Moreover, the long standing of the 1946 legislation (see European Foundation, 1986, 3) which established CNAMTS and the special regimes which cover workers in those activities neglected by it is reassuring. This suggests that whilst the incidence rates prepared in France relate in part to those quarrying activities which are inseparable from the manufacturing activity of CNAM branch 05, they never express the experience in mining (and indeed quarrying more broadly), covered as it is under a separate special regime (HSE,

1991, 35: Table 1). In sum, comparable rates of fatal injury incidence for French manufacturing can be derived quite simply from the statistics published in the ILO Yearbooks.

### Italy

The HSE (1991, 65-66), in its comparative enquiry, itself relies on the figures presented in the ILO Yearbooks in its discussion of the Italian experience, commenting that the available statistics are particularly problematic for the purposes of international comparison. Recent statistics on fatal injury in manufacturing available for Italy are profoundly confusing. Nonetheless, there is scope for the development of an understanding of the basis of the available statistics.

The labour force coverage of social insurance, and consequently of the Italian statistics which rely on it, is idiosyncratic and quite difficult to establish with complete certainty. The Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro (INAIL), the national insurance agency, covers, and collects injury data concerning, both employees and the self-employed, though the extent of the coverage of the non-manual employed labour force is idiosyncratic (HSE, 1991, 65). Whilst there seems some HSE (1991) confusion on the issue, there are indications of the treatment of white collar employees in manufacturing industry under the insurance arrangements and thus in the statistics. The European Foundation (1986, 4) notes that managerial and white collar staff are excluded except where they are exposed to specific risks. INAIL (1961, 166) provides more detail, indicating the coverage under the system of not only manual workers but 'those who, under the same working conditions, superintend the activity of others, even though not materially participating in their work.' At minimum, then, it seems that the insurance



extends to supervisors, foremen and other first line management. A generous interpretation is that under Italian statute the vast bulk of those who do actually fall victim to fatal industrial injury are covered by the insurance arrangements, and thus feature in the published official statistics. The detailed evidence available for Britain and the US suggest that, in any case, around 90% of all fatal injuries are sustained by blue collar employees.<sup>xviii</sup>

INAIL (1998, Tavola 3.1.3) figures for 1995, which breaks down fatal injuries by the nature of the incident, suggests that no deaths from occupational disease feature in the Italian toll, and by implication that such death is excluded in the precisely corresponding toll published in the ILO Yearbook of 1998. This impression is reinforced by the HSE's (1991) discussion. It may yet be the case that some such deaths featured in the earliest statistics, in years when the numbers of deaths from occupational disease recognised in any nation were very small.

The inclusion in the Italian statistics of deaths resulting from travel and vehicle related incidents in the course of work asserted by the HSE (1991, 65) is confirmed by the detailed breakdowns of recorded death in INAIL sources (e.g. 1961; 1998). Since the ILO Yearbook of 1995, the annotation of the tables published for Italy has suggested that the figures presented include commuter death. Although the recent proportion of traffic and travel related death recorded by INAIL (1998, Tavola 3.1.3; Tavola 3.1.5) is, at around 50% of all recorded fatalities, comparatively high, being some way above the 40% cited for France in 1987 by the HSE (1991). But it by no means as high as that in the (West) Germany, where all commuter deaths are well known to be acknowledged (see e.g. Der Bundesminister, 1987). Even as early as 1958, before the beginning of the period under scrutiny here, 30.9% of industrial (as opposed to agricultural) fatal injuries in Italy involved a means of transport, with 17.6% of the fatal injuries apparently involving road based motor vehicles (INAIL, 1961, Tavola 182). The bulk of these deaths did occur in construction and



transport, however, as is generally the case in countries which exclude completely from consideration all commuter death.

Whilst the HSE (1991) seems a little unclear about the inclusion of commuter death in the published statistics, suggesting tentatively that the toll generally, and at least in principle, excludes commuter death, the European Foundation (1986, 4) note that ‘some (but not all) accidents in transit’ are considered industrial fatalities, and thus subject to compensation, under Italian arrangements. The European Foundation’s research reveals that commuter deaths are in principle covered by social insurance where the use of a perilous route is unavoidable, where heavy tools are being transported or where the means of transport is owned by the company (European Foundation, 1986, 100). It thus seems that some notion of the necessity of the journey taken to the paid employment performed lies behind the partial coverage of commuter death. It seems likely that the coverage of some commuter injury has long contributed to the exceptional proportion of travel and vehicle related industrial death acknowledged in Italy. Despite the impressions visitors to the country may form, this greater proportion cannot simply be accounted for by a greater incidence of traffic death in Italian society in general – the incidence of traffic death in society at large is not, and never has been, exceptional (e.g. OECD, 1986, Table 29.1).

The ILO Yearbooks feature historical statistics on the rate of incidence of fatal injury in Italian manufacturing industry ‘per 1000 of 300 days’ for the period 1960-76. The rates which appear in the ILO Yearbooks to that of 1995, covering the subsequent years 1977-93, are rates of frequency of fatal injury per one million hours worked. For the purposes of the present study, these latter were converted into incidence rates using the series on average annual hours worked in manufacturing derived in the coming chapter on working time. The ILO Yearbooks of 1996 and 1998 then carry incidence rates per 1000 for 1991-5.



As well as fatality rates, the ILO Yearbooks also feature death tolls for the years from 1985 onwards. It is in the ILO Yearbooks of the early 1990s that the signs of profound problems with the Italian statistics emerge, with the manufacturing tolls for the early-mid 1990s, ostensibly consistently classified under ISIC Revision 3, varying from Yearbook to Yearbook by 15-20% (e.g. ILO Yearbook 1997 vs. ILO Yearbook 1996). This might simply be put down to revisions, but such revisions are not evident in the figures published for earlier years. Moreover, on the basis of the latest tolls published, which tend to substantially exceed the tolls published for the same years in earlier Yearbooks, there appears a leap in the number of manufacturing fatalities in 1988-1989, from 186 to 268, which does not coincide with any clearly identifiable or specified change in the industrial classification employed by INAIL in the preparation of the statistics. The latest tolls published in the ILO Yearbooks suggest that the number of deaths has since then remained at a higher plateau.

Despite the possibility of flexibility in the interpretation of the coverage of the social insurance arrangements which seems inherent in the treatment of commuter death, it does not seem that the acknowledgement of a greater number of commuter deaths is responsible for the leap in recorded manufacturing fatalities, since the leap is not apparent in the total toll for all industries. INAIL themselves do not seem able fully to account for the leap in recorded manufacturing fatalities (personal correspondence with Gianfranco Ortolani of INAIL, 3/2/99). They refer to the implications of the system of collation of the data which implies that the statistics published are subject to the influence of any delays in the processing of claims for compensation. But whilst this can account for the turbulence in the rates published from 1987-8 on, as INAIL suggests that such delays were pronounced in these years, this cannot account for a higher plateau of fatality in manufacturing which is apparently permanent, enduring as it does through to 1995, and on the basis of INAIL (1999, Tavola CII/1.2.1) figures, beyond the period of coverage of the present study to 1996. Nor



can administrative delays explain shifts in the numbers of manufacturing deaths recorded not mirrored in the records of death in other industries.

It seems that the higher tolls now published for Italian manufacturing must in large part result from the change to the use of an internationally recognised system of industrial classification, with the immediate effects of this change of itself disguised by the administrative slowdown of the late 1980s and early 1990s acknowledged by INAIL. Recent years have seen a change in the system of industrial classification employed away from a conception of manufacturing based around traditional Italian divisions of industry towards NACE/ISIC (personal correspondence with Gianfranco Ortolani of INAIL, 3/2/99). INAIL (1998, Tavola 3.2.1) records, for 1995, some 296 deaths in ISIC Revision 3 Tabulation Category D: Manufacturing Industry, and the breakdown of deaths by sub-division which INAIL offers confirms that the figure does cover ISIC Revision 3 manufacturing as normally understood. The INAIL manufacturing total corresponds exactly with the manufacturing toll published for 1995 in the most recent ILO Yearbooks. Although the comments of INAIL (personal correspondence with Gianfranco Ortolani of INAIL, 3/2/99) suggest that, if anything, the new classification should bring a fall in the manufacturing toll, implying the exclusion from the sectoral total of, for example, mineral extraction in which INAIL (1998) shows that 13 died in 1995, the application of the new classification must have brought other activities into the manufacturing category which account for the rise in recorded manufacturing fatality.

The best assessment of the Italian statistics seems to be that the tolls most recently published for Italian manufacturing most accurately reflect the experience in the sector as it is internationally conceived. This implies that an adjustment should be made to the fatal injury rates which preceded the leap in the death toll apparent through the muddle of the figures of the late 1980s and early 1990s. Thus, for the present study, an adjustment was



made to all the incidence rates derived for the years before 1989. In the light of the apparent administrative confusion through the late 1980s and early 1990s, the adjustment was based on statistics available for 1995 and for 1985. The share of manufacturing fatalities in industrial fatalities in each of these years was derived from the ILO Yearbooks and the two shares compared. The results showed that this share was 17% greater in 1995 than in 1985. This was taken as evidence of the implications of the change towards international standard industrial classification for the toll quoted for manufacturing. Thus, in the derivation of fatal injury incidence rates for the present study, all the incidence rates apparent from ILO statistics over period 1960-88 were inflated by 17%.

The death tolls for the 1990s under ISIC Revision 3 published in recent ILO Yearbooks imply rates of incidence of fatal injury in manufacturing which are very high by international standards. Similarly, the incidence rates derived here for earlier years, in the light of the recent Italian official statistics, suggest that the Italian experience of fatal injury has been comparatively severe. Alternative benchmarks are available for recent years. The incidence rates for all industries presented in Eurostat (1998) excluding all road traffic death show the Italian rate to be the highest amongst the European countries whose experience is explored in this study, with the HSE (1991; 1997) comparative studies having similar implications. Eurostat (1998) suggests that all Southern European countries experience greater injury incidence. This suggests that the treatment of Italy here is probably not unduly harsh.<sup>xix</sup> Although uncertainties remain, the series for incidence in manufacturing derived here on the basis of a detailed consideration of the available statistics is thus plausible.

## Britain

The compilation of the official statistics on occupational fatality in Britain is the responsibility of the Health and Safety Commission and its Executive (HSC/HSE). The injury records are based on employer reports of industrial injury.<sup>xx</sup> These statistics actually relate only to deaths occurring within the territory of Great Britain, excluding fatalities in Northern Ireland, which accounts for around 2% of UK employment in manufacturing (OECD, 1996a). From 1986 the statistics for Britain have been presented, uniquely, not according to calendar years but for the year from April to March.

The numbers of fatal injuries in manufacturing recorded in the ILO Yearbooks accord very closely with the manufacturing employee death tolls for 1981-1985 quoted by Goddard (1988, Table 1), which group deaths in quarrying together with those in mining in an entirely separate category. The resulting manufacturing death tolls are substantially lower in the early years than the tolls the HSE prepared for 1981 onwards on the basis of the 1980 SIC, which treated the perilous quarrying industry as a branch of manufacturing (see e.g. Department of Employment, 1992). It thus seems clear that the data submitted to the ILO for Britain were collated on an ISIC basis, excluding quarrying from manufacturing, even through the change in the domestic system of collation.<sup>xxi</sup>

There is no mention of the inclusion of deaths from occupational disease in British fatality tolls in any of the HSE literature, and the clear implication of the HSE cross-national comparative studies (1991; 1997a) is that such deaths do not feature in the British statistics – that it relates solely to acute injury. As regards travel, the fatality toll prepared by the HSE is exceptional in its exclusion not only of commuter death but also of all road traffic deaths occurring in the course of work (HSE, 1991). Moreover, the European Foundation (1986)



and Tombs (1999) note that at least some deaths which occur, for example, on the railways, are not notifiable to the HSE, being reported under separate systems.

It should be noted that it is death in transit in the course of work which is excluded - that vehicle related death which occurs off-premises. Incidents involving agricultural and plant vehicles such as tractors, forklifts, trucks and lorries which occur on industrial premises are notifiable, constituting 15% of all fatal injuries sustained by employees across all industries in 1990/1 (HSC, 1991, 70). Nonetheless, the exclusion of all death which occurs on public roads implies that a substantial charge must be added to British fatal injury tolls to render them approximately comparable with those of other countries. For the purposes of the present study, a reasonable point charge was applied, adding 33% to the published British tolls, such that road death in the course of work was assumed to account for 25% of fatal injuries in British manufacturing industry. This proportion was determined from the share of travel death historically apparent in the several nations for which breakdowns are available, given the clear dominance of road traffic death in work related travel fatalities.<sup>xxii</sup>

Further considerations arise from the peculiar employer report basis of the official statistics on injury. In Britain, under the provisions of RIDDOR, employers are legally required to report both major and fatal 'at work' injuries to the HSE. Although there seems limited financial or other motivation for employers to conscientiously make such reports, the statistics on injury in Britain are uniquely predicated on their comprehensiveness.

Whilst there is no self-evidently comprehensive benchmark against which the validity of the data collected by the HSE can be assessed, there is some evidence on the extent of non-notification of non-fatal injury in Britain. The most interesting of this evidence is that available for the more serious non-fatal injuries, injuries which employers are also required by law to report under RIDDOR. The so called 'major' injuries notifiable are



indeed of a severe nature, including fractures, amputations, electrocutions, acute poisonings and any other injuries which result in the hospitalisation of the victim for more than 24 hours (Nichols, 1997, Table 7.1). At least in recent years the bulk (>70%) of the reported major injuries have been fractures, though there remain a substantial proportion of amputations and other injuries of such extreme severity (Nichols, 1997, Table 1.2).

Nichols (1997, 145) notes that the responses of managers to the questions on industrial injury featured in WIRS3 (1990) suggest a marked tendency to under-report these major injuries to the HSE under RIDDOR, in contravention of employers' legal duty. The deliberately close parallels between the WIRS3 and the RIDDOR conceptions of 'major injury' suggest that the very substantial differences in the incidence recorded are not the result of a more encompassing WIRS3 notion of injury (Nichols, 1997, Table 7.1), although it has been suggested that the WIRS3 definition may be taken by respondents to range *a little* more broadly (Nichols, 1994, 109).

The more limited self-reported injury evidence from the HSE's trailer to the 1990 Labour Force Survey (LFS) on the extent of all non-fatal RIDDOR-reportable injuries - predominantly relatively minor '3 day' injuries (Stevens, 1992, 624) - reinforces the impression of substantial under-reporting to the HSE under RIDDOR (Nichols, 1997, 201). Moreover, the severity profile - the ratio of 'major' injuries to '3-day' injuries - which was recorded through the LFS supplement was very similar to that recorded under RIDDOR (Stevens, 1992, Figure 4). This suggests that the reporting of major injury under RIDDOR may be no better than the reporting of the more minor injuries which dominate the official statistics on all recorded injury.<sup>xxiii</sup>

Together, the two alternative sources of (non-fatal) injury data which are available suggest that the rate of major injury in Britain around 1990 may be understated by a factor of between 5 and 7 across the economy as a whole (Nichols, 1994, 109), and provide no



reassurance that the reporting of the more severe injuries amongst those regarded as major injuries is any better than that of major injury in general. For manufacturing specifically, the more extensive evidence from the closely comparable WIRS3 injury data suggests that the HSE major rate may have understated the incidence of such injuries by a factor of almost 4 around 1989/90 (see Nichols, 1997, Fig. 7A.1c.).

Despite the apparently massive employer underreporting of major injuries, which there is, and has indeed long been (see European Foundation, 1986, 5), a statutory obligation to report, the HSE expresses confidence that the official British fatality toll does not understate, and has not in recent history understated, the extent of the most severe injury of all (e.g. Goddard, 1988; HSE, 1991,14). The HSE expresses particular faith in the manufacturing death toll. Moreover, Theo Nichols, who has dominated the quantitative sociological analysis of occupational injury experience in the UK, has consistently expressed confidence in the HSE fatality data, adjudging recently that ‘we can be reasonably sure that the injuries it is intended to record are actually recorded.’ (1997, 200).<sup>xxiv</sup>

Yet it seems reasonable to infer that whilst it may be very unlikely that the under-reporting of fatal injury is as extensive as that of major injury, there is at least cause for suspicion that the British data on fatalities may understate the numbers of deaths in British industry, despite extensive HSE celebrations of the comparatively low official British fatality incidence rate. The attitude of employers’ and the operation of the collation systems of the HSE with respect to fatal injury would have to be completely different to that demonstrated with respect to severe injury if the fatality data were to be comprehensive. The indications of complacency at the HSE picked up by Labour Research Department (1996, 7; 1997, 5) reinforce fears about the adequacy of the fatality count.

The material pertaining specifically to fatal injury which may be used to assess under-reporting is so limited as to be of practically no use. There is certainly no general



benchmark against which to check the official statistics on fatality.<sup>xxv</sup> Unfortunately, despite the suggestion of Nichols (1997, 6-7 & Fig 1.1) that the 1990 LFS trailer features questions on fatal injury, thus offering a benchmark for the assessment of HSC tolls, it is clear from the HSC report on the supplement to the LFS that the questionnaire did not deal with fatal injury (see HSC, 1991, 55; 59).

Painstaking recent work by Steve Tombs aids the assessment of HSC fatal injury tolls. Tombs' examination of the precise remit of RIDDOR, and of its operation in practice, does not pretend to afford a precise assessment of the extent of the shortfall in the HSC's total toll, still less of the shortfall in the manufacturing toll specifically, but does identify a number of profound shortcomings in the HSC data collation system which belie the HSC's repeated claim to the effect that its tolls are 'virtually complete' (e.g. HSC, 1996, 1). The nature of the specific difficulties highlighted by Tombs is such that whilst it may well be that the manufacturing toll is less severely understated than that for the economy as a whole, it is extremely difficult to accept the HSE's assurances that the manufacturing toll in particular is a comprehensive gauge of the extent of workplace death amongst employees.

Tombs (1999, 350-354) shows that the headline tolls derived from RIDDOR, and submitted for example to the ILO, exclude a substantial number of fatal injuries on which official statistics are actually collated. Across all industries, and amongst employees, the self-employed and members of the public, the HSC's headline toll acknowledges 302 deaths from occupational injuries in 1996/7. Tombs (1999) notes that this toll excludes 30 fatalities arising from the supply or use of flammable gas which are reportable under RIDDOR but featured separately from the headline toll in the HSC's report. Moreover, under the terms of RIDDOR, deaths resulting from explosions to which the Explosives Act of 1875 applies are completely excluded from consideration, as are deaths which result from acute exposure to a radio-active substance. Similarly, some deaths occurring in the off-shore oil industry are



also excluded from consideration under the terms of RIDDOR, being notifiable under a separate reporting system. Such deaths as these, falling under the remit of agencies other than the HSE, are not apparent in the RIDDOR based headline toll.

Tombs (1999) then goes on to highlight aspects of the operation of the reporting system which strongly suggest that the HSC may well be missing fatal injuries which it seems clear should be considered as such under the terms of RIDDOR, and for which no other agency is responsible. In principle under RIDDOR, injuries to employees which result in death within one year of the precipitating incident should be considered fatal injuries, and recorded as such. Yet the HSE guidance on the application of the regulations suggests that the requirement that the employer report a fatal injury is intended to apply only to deaths occurring within a few days of a work related incident (Tombs, 1999, 358). Moreover, the operation of the system of death registration in the UK provides little reassurance that those occupational deaths which go unreported by employers will be reported by others. Tombs (1999, 360) presents evidence that clinicians at all levels are unaware of their responsibility to report industrial fatalities to the Coroner, and that deaths occurring some time after the precipitating incident are particularly likely to go unreported.

The nature of the fatal injuries excluded in principle in the HSE statistics and the problems of the reporting system are such as to suggest that the numbers of deaths missed may not be large in practice. It does seem likely, however, that some deaths which would be recorded as occupational in other nations go unregistered as such in Britain, even without reference to road traffic injury. Moreover the labour force statistics employed here to derive fatal injury incidence rates related to the UK, rather than to Britain exclusively. In this context, the addition in the present study of a 33% charge to the incidence rates apparent from ILO statistics, in order to allow a 25% share of the road traffic death excluded from

consideration in the British statistics, can hardly be regarded as representing a harsh treatment.

### Sweden.

Swedish occupational injury statistics are derived from the information collected under social insurance arrangements, by which all employees must by law be covered (ILO, 1999). Arbetarskyddsstyrelsen, the Swedes' National Board of Occupational Safety and Health, is responsible for the collation of the figures.

The statistics on occupational fatality published in national sources in recent years include deaths resulting from work related travel injuries, but exclude commuter deaths (personal correspondence with Henrik Nordin of Arbetarskyddsstyrelsen, 23/1/98; see also Sveriges officiella statistik (SOS), 1997).<sup>xxvi</sup> Where registered deaths from occupational disease do feature in the domestic figures published for recent years in national sources these deaths are detailed separately from those resulting from injury (see e.g. Statistiska centralbyrån (SCB), 1997, Table 377). Similarly, where the deaths of the self-employed and employers are featured these are detailed separately, and the focus tends to be on the experience of wage and salary earners.

The very close relation apparent from comparison of the ILO Yearbook tolls with these domestic industrial breakdowns of fatal injuries (e.g. Nordin, 23/1/98; SOS, 1997; SCB 1997) show that the recent figures published by the ILO correspond to the normal domestic presentation. They thus relate to employees, exclude commuter injury, exclude deaths from occupational illness and commuter injury, but include death resulting from travel injury in the course of work. It is clear from the comparison of the slightly earlier all-industry totals provided in SCB's (1992) statistical yearbook of 1992 with the ILO all-



industry data that this basis predates the move to the use of the ISIC Revision 3, the industrial classification which structures the breakdown available for the 1990s.

Although there is insufficient detail in the earlier editions of the SCB's yearbooks to allow a direct confirmation of the continuity of the basis of the ILO figures further back through time, the near perfect consistency of the figures presented in succeeding editions of the ILO Yearbooks for overlapping years and the absence of jumps in the ILO tolls and rates are reassuring. In sum, all the indications are that the figures for occupational fatality in manufacturing presented in the ILO Yearbooks are highly accurate guides to the incidence of acute work related injury as this is internationally understood. This is consistent with the reputation of Swedish official statistics. Fatal injury incidence rates can be derived unproblematically from the ILO Yearbooks.

#### Norway.

The occupational fatality tolls published by the ILO are taken from those on reported fatalities compiled by sex and industry now provided by the Norwegian Labour Inspection Authority, and previously provided by the National Insurance administration, rather than from the 'causes' figures for registered fatality compiled by the Norwegian central statistical agency (see e.g. Statistisk sentralbyrå (SSB), 1996). This is clear from the correspondences of the ILO figures for manufacturing with the sectoral figures from the Norwegian Labour Inspection Authority, and is confirmed by the note carried in ILO Yearbooks (e.g. ILO, 1996) to the effect that the figures presented are from labour inspectorate records.

Neither commuter deaths nor deaths resulting from occupational disease feature in the 'causes' figures for occupational fatality collated by the SSB (personal correspondence with Jens Kristian Borgan of the SSB, 11/2/98), nor in the figures by sex and industry from

which it is clear the ILO figures are taken (personal correspondence with Kari Aamot, Assistant Director, Planning and Research, Norwegian Labour Inspection Authority, 29/4/98). The annotation in the ILO Yearbook of 1996, suggesting that the tolls for Norway include some deaths resulting from occupational disease, at least since 1990, is thus profoundly misleading.

The social insurance origins of the Inspection Authority's figures by industry, and the generally much lower number of deaths logged compared with those detailed in the 'causes' tolls which relates to the deaths of all employed resident in Norway (Borgan, 11/2/98), suggest that the figures by industry relate only to employees, excluding deaths amongst the self-employed. However, Aamot (6/4/98), of the Labour Inspectorate, maintains that the industry figures relate to both employees and the self-employed. Despite the small scale of industry in Norway the proportion of self-employed in manufacturing is limited, representing only 15 of the 392 thousand employed in the sector in 1974 and 10 of the 303 thousand employed in it in 1994, i.e. around 3.5% (OECD, 1996a, Tables III&IV). As a result of remaining doubts about the extent of the labour force coverage of the Inspection Authority figures in practice, and given the limited implications of differing treatments, for the purposes of the present study the ILO tolls were treated as though they did only relate to wage and salary earners.<sup>xxvii</sup>

Fatal injuries resulting from travel incidents during the course of work are included in the Norwegian fatality counts in principle, but although it is clear that at least some such deaths do feature in published statistics (see e.g. SSB, 1996, Table 84), there seems some doubt about the comprehensiveness of their consideration in practice (Borgan, 18/2/98). To the extent that such death is understated in the industry tolls reported by the ILO the treatment of the tolls here as relating only to employees, not in addition the self-employed,



may offer some limited compensation by reducing the denominator applied in the derivation of the fatal injury rate.

The ILO Yearbooks show an exceptional number of deaths in Norwegian manufacturing in 1980. The toll for this year is 61, compared with the more typical 20 or so deaths recorded in each of the previous two years for the sector. In 1980 a single major industrial disaster occurred in Norway, with the capsizing of the Alexander Keilland accommodation rig in the North Sea. The SSB (1982, Table 60), in an idiosyncratic decomposition of the 'causes' toll according to the location of death, shows an exceptional 101 deaths in what it terms 'oil activities', compared with 3 deaths in this idiosyncratic category in 1979. Unfortunately, no conventional sectoral breakdown of occupational death in this year is presented.

It seems that the exceptional death toll recorded by the ILO for manufacturing reflects death resulting from the Alexander Keilland disaster, although this might seem at first surprising. The tolls recorded in the various sources discussed above suggest that around 40 of the 100 or so deaths occurring in the capsized rig were of employees working in industrial activities regarded as manufacturing under international standard industrial classifications. Given the well established reliability of Norwegian allocation of industrial activities, noted by the OECD (1989) for example, it must be presumed that much of the death wrought by the Alexander Keilland fell upon those working in oil processing activities, rather than in oil extraction itself.<sup>xxviii</sup> Unfortunately, the SSB themselves have not felt able to comment specifically on the extent of the death apparent amongst manufacturing employees as a result of the disaster.

In conclusion, the fatality tolls published for manufacturing in the ILO Yearbooks, and the rates which accompany them, seem reliable guides to the extent of fatal occupational injury amongst employees. This is exactly what would be expected from statistics collated

by bodies which are generally regarded as exemplary in their collation activities and which often shape international classification. The derivation of comparable rates of fatal injury incidence for Norway from ILO statistics is unproblematic.

## Finland

Statistics Finland compiles figures on industrial injuries sustained by wage and salary earners from the information on compensation held by the Finnish Federation of Accident Insurance Institutions (Statistics Finland, 1997a, 5). The compensation arrangements cover all injuries occurring in the course of work together with commuter injury and certain occupational illnesses (personal correspondence with Kaija Leena Saarela, Director (Acting) of the Department of Occupational Safety of the Finnish Institute of Occupational Health, 9/2/1998). Employees in the historically extensive state industry (see e.g. Lilja, 1992) are covered by the federation.

Historical statistics distinguishing between compensated death resulting from workplace incidents, travel incidents in the course of work and, acknowledged instances of occupational disease and commuter incidents are available for the economy in its entirety over the period, 1975-94 (Statistics Finland, 1997a, Table appendix 1). Whilst it is clear from these figures that commuter death is systematically excluded from the statistics cited in the ILO Yearbooks, other issues remain. The totals for the whole economy shown in the ILO Yearbook of 1984, and successive issues, for the period 1979 onward, correspond to the total of fatal injury resulting from workplace and travel incidents. However, the totals for the economy in its entirety over 1976-82 published in the ILO Yearbook of 1983, which are themselves consistent with the total tolls published in Statistics Finland (1983, Table 318),



correspond with the sum total of workplace and traffic injury deaths *and* deaths from occupational disease featured in Statistics Finland (1997a, Table appendix 1).

Thus, the ILO Yearbook of 1983 and preceding Yearbooks, feature death tolls which include a few deaths resulting from occupational illness. In practice, however, the issue is a relatively minor one. Even over the years 1979-82 for which the ILO Yearbook of 1984 offers an alternative source which excludes deaths from occupational disease, the discrepancy between the manufacturing tolls cited suggests that only 15 deaths from occupational disease in manufacturing were recorded, compared with 121 workplace and work related travel deaths in the sector. In the earlier years spanned by the statistics of the ILO Yearbook of 1983 acknowledged death from occupational disease is much more limited even than this. According to Statistics Finland (1997a, Table appendix 1) only 18 of the approximately 450 deaths recorded across the economy as a whole in the 3 years 1976-1978, for which the ILO Yearbook of 1983 constitutes the only ILO source, were the result of occupational illness. Thus it seems that whilst a very few deaths from occupational illness do feature in early ILO figures for Finland so few such deaths were acknowledged in these early years that this is of little significance for the statistics published.

Recent sectoral statistics on occupational fatality published domestically in Finland are structured by ISIC Revision 3 (e.g. Statistics Finland, 1997a, Table appendix 2). Even in earlier years when the use of ISIC was less common domestically, it seems that Statistics Finland made real efforts in submissions to the ILO. Comparing the rather idiosyncratic industrial breakdown used in Statistics Finland (1983, Table 318) with the sectoral breakdown for the overlapping period featured in the ILO Yearbook of 1983, it is clear that substantial efforts were made to decompose injury incidence according to an internationally recognisable industrial classification. In sum, the historical statistics available for Finland in

the ILO Yearbooks provide an accurate guide to fatal injury experience in manufacturing as internationally conceived.

### Austria

The principal social insurance body, the Hauptverband der österreichischen Sozialversicherungsträger (1998), responsible for the collation of all injury statistics, and indeed their submission to the ILO (see ILO, 1999), shows that provision for social insurance for occupational incidents extends beyond employees. The Austrian Workers' Compensation Board, Allgemeine Unfallversicherungsanstalt (AUVA, 1998), the principal occupational insurance board, and that covering the industrial sector, confirms this coverage of at least some self-employed. Comparing the historical benchmarks of the employed labour force and the insured population presented by the Österreichischen Statistischen Zentralamtes (OSZ, 1997, Table 7.02; 8.02) shows that the social insurance has long extended right across the employed population.<sup>xxix</sup> The historically extensive state industry (see e.g. Traxler, 1992) is thus also covered.

The figures typically presented in domestic sources by the Österreichischen Statistischen Zentralamtes (e.g. OSZ, 1995, Tables 3.12-3.14) exclude completely from consideration instances of occupational illnesses, though the ILO (1999) notes that figures on cases of certain forms of occupational illness are collected. The historical snapshots presented (OSZ, 1995, Table 3.14) feature deaths resulting from travel incidents in the course of work, and indeed commuter injury, which are however distinguished from deaths resulting from occupational injury in the breakdown offered. Commuter death accounts for



around a quarter of all death consistently, from the first figures quoted, for 1975, to the last, for 1994.

However, the total death tolls across all industries recorded by the Österreichischen Statistischen Zentralamt (e.g. 1995, Table 3.14) do not correspond at all well with the total tolls recorded in the ILO Yearbooks, being far greater than the number of deaths shown in the ILO data, with this discrepancy increasing over time. For 1994, the domestic source records 390 deaths in total, whilst the ILO total registers only 160. The detailed breakdown by type of incident presented in the domestic source allows some assessment of the likely basis of the difference. It is not accounted for by the exclusion of commuter death from the ILO series, since such deaths numbered only 111 in the year. Nor is it accounted for by the total inclusion of all travel related death, whether commuter or in the course of work itself, since this accounts for only 193 deaths in 1994.<sup>xxx</sup>

The body responsible for the figures published domestically and the submission of statistics to the ILO, the Hauptverband der österreichischen Sozialversicherungsträger, themselves show no interest in throwing any light on the discrepancy.<sup>xxxi</sup> Thus the basis of the almost perfectly time consistent death tolls and rates of incidence for manufacturing presented in the ILO Yearbooks for Austria is far from clear. It may be the case that the ILO figures relate only to fatal injuries covered by AUVA, and not the other three, much smaller, insurance boards.

If this were indeed the case, the ILO figures for occupational death in manufacturing could be an accurate reflection of acute fatal injury occurring in the course of work in the sector. In the absence of any further information, the ILO figures were taken as they stood for the purposes of the present study. The figures used here can thus best be interpreted as lower bound estimates of the extent of acute fatal injury in Austrian manufacturing.

## Canada.

Human Resource Development Canada (HRDC), with the assistance of the Association of Worker Compensation Boards Canada (AWCBC), is responsible for collation of national injury statistics from the records kept by the ten provincial and two territorial Workers Compensation Boards (WCB) under the National Work Injury Statistics Program (NWISP).<sup>xxxii</sup> The Program was solidified in the early 1960s (personal correspondence with Christian Strano of HRDC, 28/8/98).

Even in the early 1960s, the domestic commentaries on the statistics available suggested that the coverage of industrial workers was close to total, despite the autonomy of the regions, whilst that of agricultural and service workers was acknowledged to be partial (Statistics Canada, 1964, 743-4; 1967, 772-3). The compensation arrangements, and thus the statistical collation program, now span all civilian sectors and establishment sizes.<sup>xxxiii</sup> Although it seems that at least some self-employed are entitled to apply for coverage with their WCB, comparison of the total number of persons covered with the total number employed suggests that very few self-employed are in fact covered, and thus that the injury statistics relate almost exclusively to wage and salary earners, as is suggested by the common use of the term 'employees' in connection with the data (Statistics Canada, 1994, Table 6.1; Table 6.13). The impression that the self-employed are commonly excluded is reinforced by the HRDC (HRDC web-site, 29/10/98), and indeed by the ILO (1999). Indeed, at least in early years it seems that the provision of compensation to employees in small establishments, and thus their inclusion in the published injury data, depended on the application of the employer in some provinces (Statistics Canada, 1967, 772-3). However, deaths need not occur within a specific period of injury, providing there is medical evidence that the injury was the cause of death (ILO, 1999).



As the ILO (1999) suggests, those dying whilst commuting to or from work are not covered by the provisions of the compensation legislation, so commuter deaths do not feature in the Canadian figures (personal correspondence with Val Johnson of the AWCBC (29/7/98); with Christian Strano of the HRDC (28/8/98)). Vehicle related and travel deaths occurring during the course of work are, however, included in the figures published (ILO, 1999; personal correspondence with Val Johnson of the AWCBC (29/7/98); with Christian Strano of the HRDC (28/8/98)).

The distinction between occupational fatalities resulting from acute injury and those resulting from chronic illness or disease is rarely made, with the term 'injury' generally used in domestic sources in a manner which encompasses certain diseases and illnesses. ILO (1999) confirms that deaths resulting from occupational disease are included in the statistics published in the ILO Yearbooks where the deaths were compensated by the provincial and territorial boards. The separation of those compensated deaths which resulted from chronic disease, rather than acute injury, is obviously critical to the derivation of comparable data on fatal injury being attempted here.

Historical statistics detailing the relative weight of compensated death resulting from chronic illness and that resulting from acute injury in the published data for Canadian manufacturing seem extremely difficult to obtain, in large part due to the immediate role of the provincial and territorial WCB in the collation of injury figures. Recent statistics compiled under a new initiative suggest that a little less than one third of the deaths recorded in manufacturing over the period 1992-95 were considered to result from occupational disease, with the data for 1996 suggesting that there is some tendency for this proportion to rise (figures provided by Val Johnson of the AWCBC in personal correspondence, 29/7/98). Table 3 details the breakdown.

|      | Injuries | Disease | Not identified | Disease of total |
|------|----------|---------|----------------|------------------|
|      |          |         |                |                  |
| 1993 | 87       | 38      | 3              | 30% (of 128)     |
| 1994 | 89       | 45      | 4              | 33% (of 138)     |
| 1995 | 90       | 44      | 5              | 32% (of 139)     |
| 1996 | 70       | 53      | 22             | 37% (of 145)     |

Table 3. Recorded occupational fatalities in Canadian manufacturing, 1993-1996.

The only acute-chronic breakdowns of the numbers of compensated occupational fatalities available for earlier years relate to all industries exclude all occupational fatalities in Quebec from 1981 and are not available at all for the years after 1987.<sup>xxxiv</sup> Nonetheless, they provide more or less regular indications of the extent of officially recognised death from occupational disease.



| Year | Deaths from illness | All fatalities | % illness in fatalities |
|------|---------------------|----------------|-------------------------|
|      |                     |                |                         |
| 1961 | 90                  | 1087           | 8.3%                    |
| 1963 | 96                  | 1147           | 8.4%                    |
| 1965 | 92                  | 1263           | 7.3%                    |
| 1967 | 91                  | 1150           | 7.9%                    |
| 1969 | 103                 | 1057           | 9.7%                    |
| 1971 | 123                 | 1060           | 11.6%                   |
| 1973 | 115                 | 1227           | 9.4%                    |
| 1976 | 110                 | 926            | 11.9%                   |
| 1981 | 105                 | 830            | 12.7%                   |
| 1985 | 104                 | 648            | 16.0%                   |
| 1987 | 120                 | 665            | 18.0%                   |

Table 4. Recorded occupational fatalities in Canada, all industries, 1961-1987.

Table 4 above reports the number of compensated fatalities across all industries which are described as having resulted from ‘exposure to dust, poisonous gases and poisonous substances’; as in Statistics Canada’s Canada Yearbooks to 1965, and from ‘inhalation, absorption, ingestion and industrial disease’; as such deaths are termed from the Canada Yearbook of 1966. This table does suggest that there is a slight trend towards the official acknowledgement of more deaths resulting from occupational illness and disease,

and a clear trend towards a greater share of compensated deaths from occupational disease in all compensated death.<sup>xxxv</sup>

Some revealing statistics on the more recent development of the distribution of compensated deaths by injury and illness, the acute-chronic split, in Ontario are available (Ontario WCB, 1997, Table 13). Ontario contributes by far the largest provincial share of all compensated fatalities in Canada, amounting to between one third and one half of all occupational deaths acknowledged in recent years. Accordingly, the province, which has claim to being the largest employing region since the 1960s (Statistics Canada, 1994, Table 6.3), had, in 1990, by far the largest provincial compensation expenditure (Statistics Canada, 1994, Table 6.12). The extent of the province's contribution to the national figures is in large part due to the fact that Ontario accounts for almost all the compensated deaths from occupational disease broken out in the Canadian statistics available for recent years.

In Ontario, whilst the proportion of all compensated deaths resulting from disease was relatively constant, at a little over 30%, over 1988-90, in the period 1991-95 it ranged between 34% and 41%. There was however was no clear tendency towards an increase in the proportion over the years of this later sub-period, fluctuating as it did around an average of 38%. The statistics on Ontario, then, suggest that the tendency for a growing proportion of all compensated death to be accounted for by deaths resulting from occupational illness which is evident in the statistics for all Canada in the 1960s and 1970s, and for all provinces bar Quebec over 1981-87, continued over the period 1988-95.

The figures on the proportion of recorded occupational death in Canadian manufacturing resulting from occupational disease over the period 1993-5, allow the estimation of this sectoral proportion over the entire period 1960-95 from the more fragmentary figures on death from occupational disease available for earlier years. The annual series derived by splicing these earlier figures to those for the most recent, sectoral



benchmark, years has this proportion rising fitfully from 12% in the early 1960s to 31% in the early 1990s. This series allows the construction of a series for the rate of incidence of acute fatal injury in the Canadian manufacturing sector, given only an historically consistent series on all recorded fatality in manufacturing from the ILO.

The rates of incidence of fatality in manufacturing published by the ILO from 1960, in stark contrast to the raw fatality tolls, demonstrate almost perfect consistency.<sup>xxxvi</sup> The only problematic years are 1988-92, for which no industrial decomposition of the rate of fatality incidence is available. For the purposes of the present study, for these years a rate of incidence for manufacturing was projected from the figures for the rate of incidence across all industries, with regard to the relationship of this more general incidence rate to the rates for manufacturing specifically available in 1987 and 1993. The series for fatality incidence in manufacturing over 1960-95 was then adjusted for the inclusion of death resulting from occupational disease, using the estimate of the share of such death in all recorded manufacturing fatality derived as detailed above. Whilst the process of derivation pursued in the present study is involved, and indeed embodies elements of estimation, the series for the rate of incidence of fatal injury resulting can be taken as reasonably accurate indications of the rate of incidence of fatal injury in the Canadian manufacturing sector.

## USA

The industrial fatality statistics available for the United States raise particular and quite involved data issues arising from the system of statistical collection traditionally employed. From 1992, the US statistics on occupational fatal injuries have been based on a thoughtfully executed comprehensive census. Until 1991, however, sectoral statistics on the incidence of industrial fatalities in the US were derived on the basis of the annual US



Department of Labor's Bureau of Labor Statistics (BLS) sample survey of establishments, with the only attempt at a comprehensive industrial fatality count being that of the National Safety Council (NSC) for the economy as a whole (Drudi, 1995). This historical dependence on sample surveys of employers for statistics on occupational fatalities is unique amongst the countries under study here.

As Schauer & Ryder (1972) and Drudi (1997) suggest, the BLS does seem to have long accorded some importance to the collation of statistics on 'work-related' fatalities, with the first survey of occupational injuries and illnesses undertaken in 1939 (Drudi, 1995). However, the voluntary nature of the survey implied that the accuracy of the statistics derived was crucially dependent on the goodwill of employers, and in particular of those with the very worst work fatality records (Drudi, 1995). The limitations of the statistics collated under these arrangements had become glaringly obvious by 1948/9, when fewer than one third of the construction companies sampled provided usable fatality statistics (Drudi, 1997). In acknowledgement of the severity of the under-reporting inherent in the survey arrangements, until 1964 the BLS collaborated with the National Safety Council in the preparation of its fatality estimates, thus drawing on supplementary sources of information (Drudi, 1995).

Despite the intrinsic problems of the statistical collection method, the early emphasis given to the experience in manufacturing industry is evident in the large scale of the sample survey of the sector relative to that of other industries. The 1963 survey covered 51,505 manufacturing establishments employing over 9.6m workers, 57% of all known manufacturing employees (Department of Labor, 1965, 192). Under the Occupational Safety and Health Act of 1970 (OSHA) private sector employers were required to keep records of injury and illness (Drudi, 1997), and response to the BLS sample survey became mandatory (Drudi, 1995). OSHA also occasioned a further increase in the extent of sampling, with the



total number of establishments surveyed doubling from 100,000 in 1971 to 200,000 in 1972 (Schauer & Ryder, 1972). In the succeeding years, during the period 1973-91, between 280,000 and 600,000 establishments across all activities were covered annually by the BLS sample surveys (Toscano & Windau, 1993). The magnitude of the sample survey and, in particular, its obvious focus on manufacturing in the earlier years under study here, do offer some reassurance as to the consistency of the historical statistics derived over the years 1960-91 for which the surveys constitute the only source of a sectoral decomposition.

Throughout the survey's long life, the estimates of work related fatality derived from it excluded the experience of the self-employed, public sector employees, 'employees of private households', and all those working in establishments with fewer than 11 employees (Wokutch, 1992; Toscano & Windau, 1992; Drudi, 1995). Moreover, the BLS became increasingly concerned that even the estimates for more recent years, derived with the benefit of massive samples, may not constitute a reliable guide to occupational death even amongst the workers in private sector establishments with 11 or more employees to which they are supposed to relate (Wokutch, 1992; Drudi, 1997). The understatement suspected would help to account for the huge discrepancies between the BLS survey based estimates of the national occupational fatality toll and the tolls published by the Centers for Disease Control (CDC) together with the National Institute of Occupational Safety and Health (NIOSH) and by the National Safety Council (NSC), which in 1990 suggested two and four times as many deaths as the BLS respectively (Drudi, 1997).<sup>xxxvii</sup>

As would be expected from the limited pertinence to manufacturing industry of the workforce groups intentionally excluded from the BLS survey statistics, the extent of the understatement of the death toll in the BLS statistics for manufacturing collated in ILO tables seems much less severe it was for the economy as a whole. The comprehensive Census of Fatal Occupational Injuries (CFOI) conducted by the BLS from 1992 on suggests



that, at the turn of the decade, the BLS survey it succeeded was understating the annual manufacturing fatal injury toll by around 150 of the approximately 750 deaths the census registered when first conducted (Department of Labor, 1998; ILO, 1996). This discrepancy can in part be accounted for by the consideration in the census, in contradistinction to the survey, of the experience of the self-employed and those employed in small establishments.

Thus it seems that understatement in the rate of incidence of fatality in manufacturing calculated by the BLS on the basis of the survey data, understood as relating exclusively to the acute injuries suffered by manufacturing employees in workplaces employing at least 11, was in practice quite limited, even as the survey method was abandoned in favour of the census. To the extent that such a systematic understatement did exist it may well have been the result of the neglect in the survey returns of some of the occupationally-related traffic death which the new CFOI goes to such pains to identify (see Windau & Goodrich, 1990). The deaths of commuters are excluded from consideration in the CFOI just as they were under the survey methodology, playing no part in any apparent discrepancies.<sup>xxxviii</sup>

Wokutch (1990, Table 5-2) presents previously unpublished BLS death tolls relating to deaths amongst all manufacturing employees, rather than only those working in establishments employing 11 or more, over the period 1979-85. The use of labour force data pertaining to employees in manufacturing allows the construction of a fatal injury incidence rate for all wage and salary earners in manufacturing for these years.<sup>xxxix</sup> The BLS survey based frequency rate data published for the US in the ILO Yearbooks can be used to infer an incidence rate for manufacturing employees in establishments employing 11 or more, given data on the average annual hours worked in the sector. Comparison of the fatality incidence rates (per 1000) derived suggests that the rate of incidence of fatal injury in very small establishments is substantially above that in the larger see Table 5 below.



| Year | Fatality incidence per 1000 manufacturing employees. | Fatality incidence per 1000 manufacturing employees in establishments of 11 or more. |
|------|--|--|
|      |  |  |
| 1979 | 0.055  | 0.053  |
| 1980 | 0.058  | 0.054  |
| 1981 | 0.052  | 0.051  |
| 1982 | 0.046  | 0.042  |
| 1983 | 0.046  | 0.042  |
| 1984 | 0.045  | 0.042  |
| 1985 | 0.048  | 0.044  |

Table 5. Fatal injury incidence in US manufacturing, published and unpublished figures.

In the absence of overlapping data from the sample survey and the comprehensive CFOI, the construction of a reliable series for fatal injury incidence of the sort required for the present study is necessarily problematic. The survey based incidence data derived for 1960-91 from the frequency rates published by the ILO can most readily be spliced onto the CFOI based incidence data available 1992-5 on the assumption that actual incidence in 1991 was the same as that evidenced in the first CFOI in 1992. The remarkable stability of the rate of incidence of fatal injury in manufacturing over the period 1992-4 evident from the census affords this procedure some legitimacy.

The inflation of the survey based incidence rates which this procedure involves is consistent with the suggestion of the figures presented by Wokutch (1990) that workers in smaller establishments are more likely to find themselves the victims of fatal injury, actually

suggesting a still greater differential than implied by the table above.<sup>x1</sup> In summary, though substantial correction of the available series from the years before the 1990s is required for the purposes of the present study, there can be confidence in the accuracy of the historical fatal injury incidence series resulting for the USA.

### Japan.

Statistics on industrial injuries, and indeed recognised illnesses, are compiled by the Ministry of Labour for the Japan Industrial Safety and Health Association (JISHA). The statistics are derived variously from claims from Workmen's Accident Compensation Insurance (WACI), administered by the Ministry of Labour, from employer reporting compulsory under the Industrial Safety and Health Law, and from the Ministry of Labour's sample surveys of certain workplaces (JISHA, 1996). Wokutch (1992) notes that work fatalities are reported first to the local Labour Standards Bureau or Office and thence to the Tokyo HQ of the Ministry of Labour. The ILO (1999) notes that there is no specified period of time after the occurrence of an incident beyond which death resulting from work related injury will not be considered occupational.

The Japan Ministry of Labor (1984, 52) notes that WACI covers 'employees in factories, manufacturers and firms'. In his two comparative studies of occupational injury experience, the latter of which focuses particularly on Japan, Wokutch (1990, 145, 156, 162n1; 1992, 201, 205) insists that practically all employees in Japan are covered by the injury data, the vast bulk by virtue of their coverage by WACI. According to Wokutch (1990), the principal groups excluded from WACI are government employees, the self-employed and seamen. Although the ILO (1999) suggests that all employees in all sectors are indeed covered, it notes that information on the coverage of the statistics by



establishment size is 'not available'. Takahashi & Someya (1985) suggest that workers in agricultural co-operatives and, more importantly for present purposes, workers in enterprises with fewer than 5 regular employees are also excluded from the compensation provision.

Comparison of the numbers employed in Japan with the numbers acknowledged as covered by WACI do suggest substantial swathes of the employed population not subject to its arrangements, even in recent years. According to the Japan Statistical Association (JSA, 1997, Tab 18-24), in 1994 a total of 47m were covered by WACI, whilst total employment numbered 64.5m (Tab 3-4). In 1994 around 5m were employed by the government (Tab 3-4), and 8m were self-employed, with a further 4m classified as 'family workers' across the society as a whole (Tab 3-3). These labour force figures suggest that there were around 47.5m private sector employees in 1994, a figure according well with that for the number covered by WACI. This in turn implies that whilst large numbers of the employed are not covered, Wokutch's (1990; 1992) insistence that the compensation arrangements do cover almost all private sector employees may be well founded.<sup>xli</sup>

Within manufacturing itself, however, these same tables suggest that in 1994 only 11.5m of the 15m employed were subject to WACI (JSA, 1997). BLS (1996b) and OECD (1978; 1996a) labour force statistics, according very well with the historical data presented in JSA (1987a, Table 3-8), suggest that the self-employed and family workers accounted for around 14-17% of those employed in manufacturing through the 1960s, 1970s and 1980s, with this proportion then falling rapidly to around 10% by the mid-1990s. This suggests that around 1.5m of the 15m employed in manufacturing in 1994 were self-employed or family workers, leaving almost 2m whose exclusion from coverage by WACI seems to contradict Wokutch's (1990; 1992) position. It may well be that this discrepancy expresses the exclusion from WACI of employees in firms with fewer than 5 regular employees.



Nevertheless, Wokutch's (1990, 145; 162, n1; 1992, 201, 205) comments on the use of a supplementary reporting system for the numbers of fatalities alongside the claims based fatality data in the collation of official statistics on occupational fatality bolster his insistence that, on their own conception of a fatality, the Japanese statistics are comprehensive in their coverage of the deaths of employees in manufacturing. Moreover, the continuity in the historical fatal injury data, extending back as far as 1958, suggests that there has been no recent overhaul in the coverage or collation of the statistics - that the current operationalisation of the notion of an industrial fatality for statistical purposes has long been in currency (JSA, 1987b, Table 25-10; JISHA, 1996, Fig.1).

Therefore, whilst it does seem that the Japanese statistics on the numbers of fatal injuries neglect few employee deaths, Wokutch's (1990; 1992) phraseology, as indeed the comment of ILO (1999), implies that the figures exclude the deaths of self-employed and family workers. This indeed is the implication of the English terminology employed in domestic statistical sources in Japan, which tend to annotate injury figures as referring to 'workers'. Although this term is sometimes used rather loosely in translation, JSA (1996, 383) clarifies the usage, stating that the term 'workers' is used to refer to 'all persons employed in and receiving wages from ...establishments.'

The excluded self-employed often work in very small firms involved in subcontract work at the very bottom of the manufacturing production supply pyramid. The small, family operated enterprises which feature so prominently in Japanese manufacturing are non-unionised establishments offering little security to those working in them (Berggren, 1994, 25; Goodman & Peng, 1996, 197). The available statistics on the injury profile by establishment size in Japan, whilst not detailing the experience in such very small enterprises, does portray a negative relationship between establishment size and the incidence of injury which suggests that these very small workplaces may be particularly



hazardous, and that Japan's statistics may be lent a healthier glow by the exclusion from consideration of the very smallest companies.

JISHA (1997) notes that 80% of all recorded injuries in 1994 took place in establishments employing fewer than 100 workers. This situation is partly a result of the large number of small workplaces, and indeed small and medium sized enterprises, in Japan. Some 45-50% of workers in Japanese manufacturing worked in enterprises with fewer than 100 employees in the late 1970s and early 1980s (Ministry of Labor, 1982, Table 6; Layard et al, 1991, Table 1). The JSA (1987a, Table 3-13) evidences the historic weight of even smaller companies in the sector, showing that the proportion of manufacturing employees working in establishments with less than 30 wage and salary earners hovered around 25-30% over the period 1960-1985. Amongst the manufacturing sectors of advanced industrial societies, perhaps only that of Italy features a greater preponderance of small establishments, and indeed companies (see Franzosi, 1995, 84-5).

But the fragmented statistics available that break injury incidence down by establishment size demonstrate that there is more to the distribution of injury between larger and smaller workplaces than the weight of the small establishment in Japanese manufacturing employment. JISHA (1996, Fig. 10) shows that in 1994, within manufacturing, the frequency of occurrence of *all* recorded injury rose monotonically with the size band of the workplace beyond the 100 employees threshold to which the figure is confined, with the recorded incidence rate for workplaces with between 100 and 299 workers workplace employment band seven times that in workplaces with more than 1000 employees. Wokutch (1990, 136, 160; 1992, 75, 227) comments that the disparity of injury experience between the larger firms and the smaller, often the formers' sub-contractors, has been increasing over time. Takezawa et al (1982, 53: Figure 2) provide a glimpse of the relative experience of subcontract workers, presenting data for shipbuilding. They show that



in each year of the period 1965-75, the rate of frequency of injuries (per 1000 hours worked) and the rate of days lost due to injury (the 'severity rates') were 2-3 greater for subcontract workers in shipbuilding than they were for regular workers. Comparisons based on all recorded injury must, however, be regarded with caution in the light of their evident dependence on the propensity of employees to report occurrences and on the seriousness with which record keeping is regarded by employers.

There is, however, some evidence of the greater rate of incidence of fatal injuries, specifically, in smaller workplaces. The annual editions of the JSA's Yearbook feature, if a little sporadically, statistics on the occurrence of incidence of fatal injury amongst wage and salary earners in manufacturing by establishment size. For example, there is evidence from a 1972 survey of establishments employing more than 30 employees, with the exclusion of those whose work was completely clerical in character, that the rate of frequency of fatalities was significantly lower amongst those working in the largest workplaces (JSA, 1975, Table 440A).

Further evidence emerges from Wokutch's (1990; 1992) studies and from the figures published in the ILO Yearbooks. Wokutch (1990) records fatality tolls taken from ILO Yearbooks which, as he comments, relate to the experience of all employees in manufacturing, and which, used in conjunction with the appropriate labour force data, imply an average rate of incidence of fatal injury of 4.4 per 100000 employees over the period 1979-85.<sup>xlii</sup> This compares with the incidence rates in larger workplaces exclusively, which can be derived from the frequency rates presented in the ILO Yearbooks. Relying on a sample survey of manufacturing workplaces with more than 100 regular employees (see Wokutch, 1990; 1992; JSA, 1987b, Table 25-11), this data suggests a much lower annual average incidence rate, of 2.6 per 100000 workers, in the same span of years, given the annual 2136 hours per manufacturing employee in establishments employing more than 30



workers which is cited by the JSA (1985, Table 3-39).<sup>xliii</sup> This confirms that the risk of death has been very substantially greater in smaller establishments. Of course, doubt still remains about the nature of the differential with respect to the very smallest, family based, workplaces apparently excluded completely from published statistics.

Wokutch (1992, 243, en3) notes that the terminology used in the Japanese occupational fatality records leaves room for doubt about the inclusion of deaths resulting from occupational illness. Certainly WACI does provide compensation to victims of certain industrial diseases (Japan Institute of Labour, 1984, 52), and some of the published data on injuries resulting in an absence from work of more than 4 days certainly do relate in part to disease (JISHA, 1995, Table 2). Moreover, JISHA (1996) features a definition of industrial accidents which makes reference not only to injury but to disease. The report also features, in its commentary on the 'Situation of industrial accidents', a detailed breakdown of the total number of fatalities recorded in 1994. The absence of any mention of dust, gas, vapour, fumes or similar, and still less of industrial disease or illness, in the breakdown of total fatalities by the nature of the incident (JISHA, 1996, fig. 11) suggests that the toll cited, 2301, features few, if any, deaths resulting from chronic occupational disease. It is, however, possible that some may be included in the 'other' category left undetailed, which accounts for 13.9% of all acknowledged occupational death in this year. Some 20.7% of the deaths registered in the manufacturing sector specifically in 1994 are classified in this way, as 'other'.

The alternative breakdown offered by JISHA (1996, Fig. 14), by 'cause' of incident, has 19.9% of deaths across all industries classified as resulting from the action of material agents 'other' than those specified. Within manufacturing, 16.3% of deaths are characterised in this way (JISHA, 1996, Fig. 16). A further 5.6% are characterised as being the result of 'dangerous goods, harmful substance'. Earlier figures are also decomposed by 'cause'. The



JSA (1975, 634-5: Table 440B) features a breakdown of deaths in 1972 which records that, of the 5631 deaths acknowledged across all industries, 74 deaths (1.3%) resulted from 'special dangerous accidents: poison', and a further 350 (6.2%) from 'miscellaneous causes'. Of the 1184 manufacturing deaths recorded in that year, the breakdown showed that these categories accounted for 33 deaths (2.8%) and 52 deaths (4.4%) respectively. Even where harmful substances are explicitly mentioned in the classifications employed, the nature of the occupational death, whether it resulted from acute injury or from chronic illness, is left unclear. Yet it seems most likely that these figures relate to acute injury, including few if any deaths resulting from prolonged exposure to harmful substances.

The total tolls for 1972 and 1994 in these sources, relating to the numbers acknowledged as dying across all industries, are perfectly consistent with the historical series presented in JISHA (1996, Fig. 1), which describes the evolution of occupational fatalities over the period 1958-94. In turn, the total tolls recorded in this publication are themselves consistent with those published for Japan by the ILO for the overlapping period 1979-94. These mutual consistencies suggest that the ILO death tolls relate to occupational injury, excluding deaths which resulted from disease or illness, despite the annotation of the data for Japan in the ILO Yearbooks of 1987 and 1993.<sup>xliv</sup>

Commuter deaths, whilst subject to compensation, do not feature in the published tolls (Wokutch, 1990, 144; JSA, 1997, 782; ILO, 1999). Travel death occurring in the course of work does, however, feature, although the extent of this is quite difficult to assess since the categorisation is more or less severely idiosyncratic in the various sources. Across all industries, 28.6% of occupational death in 1994 was obviously traffic related, whilst within manufacturing only 13.2% was so (JISHA, 1996, Fig11; Fig.13).<sup>xlv</sup>

In the case of Japan, domestically published occupational death tolls were used to supplement those more recent figures published in the ILO Yearbooks in order to derive the



comparable data sought here. The figures on the manufacturing death toll in JSA (1987b) were used for 1960-85 and those in the ILO Yearbooks for 1986-95. Reassuringly, these sources feature total tolls, for the economy as a whole, which correspond to the consistent economy-wide time series which is depicted in JISHA's Status Report (1996, Figure 1), the correspondence of which to international notions of injury is fairly clear.<sup>xlvi</sup> The rates of incidence of fatality derived for the purposes of the present study from the tolls, using a series for the number of employees in manufacturing constructed from OECD (1996a) labour force statistics, represent broadly comparable gauges of the incidence of acute fatal injury. Perhaps uniquely amongst the countries under study here, however, it seems that the consideration of the extent of death amongst Japan's self-employed would substantially worsen the judgement of the comparative safety performance of the nation's manufacturing sector.

### **Overview of comparative historical fatal injury in manufacturing.**

The rates of incidence of fatal injury derived from the painstaking process of assessment of the meaning of the official statistics available are presented in Charts 1 to 4 below. They describe the pattern of fatal injury incidence across the eleven nations over 36 years. In the light of the extensive efforts made to render the rates meaningful reflections of fatal injury experience, as detailed above, the qualifications to comparability are few and limited. The overall comparative historical pattern is broken down into three to show the historical experience of each of the eleven nations. The patterns of national development the data describe are of much interest in themselves. In general, there are substantial commonalities of historical experience, but there are also exceptional national developments worthy of note.

Chart 1. Rate of incidence of fatal injury (/1000 employed)

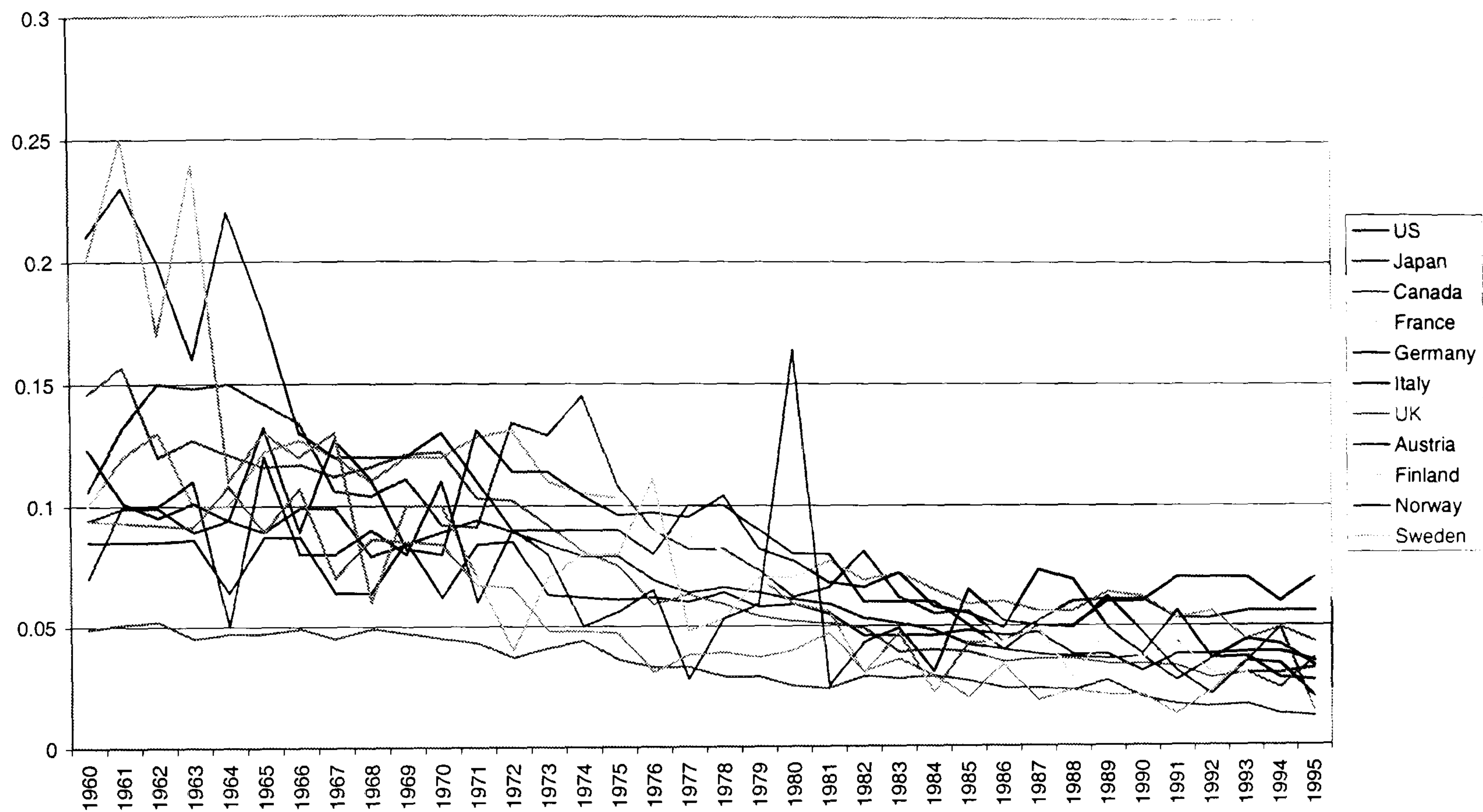


Chart 2. Rate of incidence of fatal injury, European core.

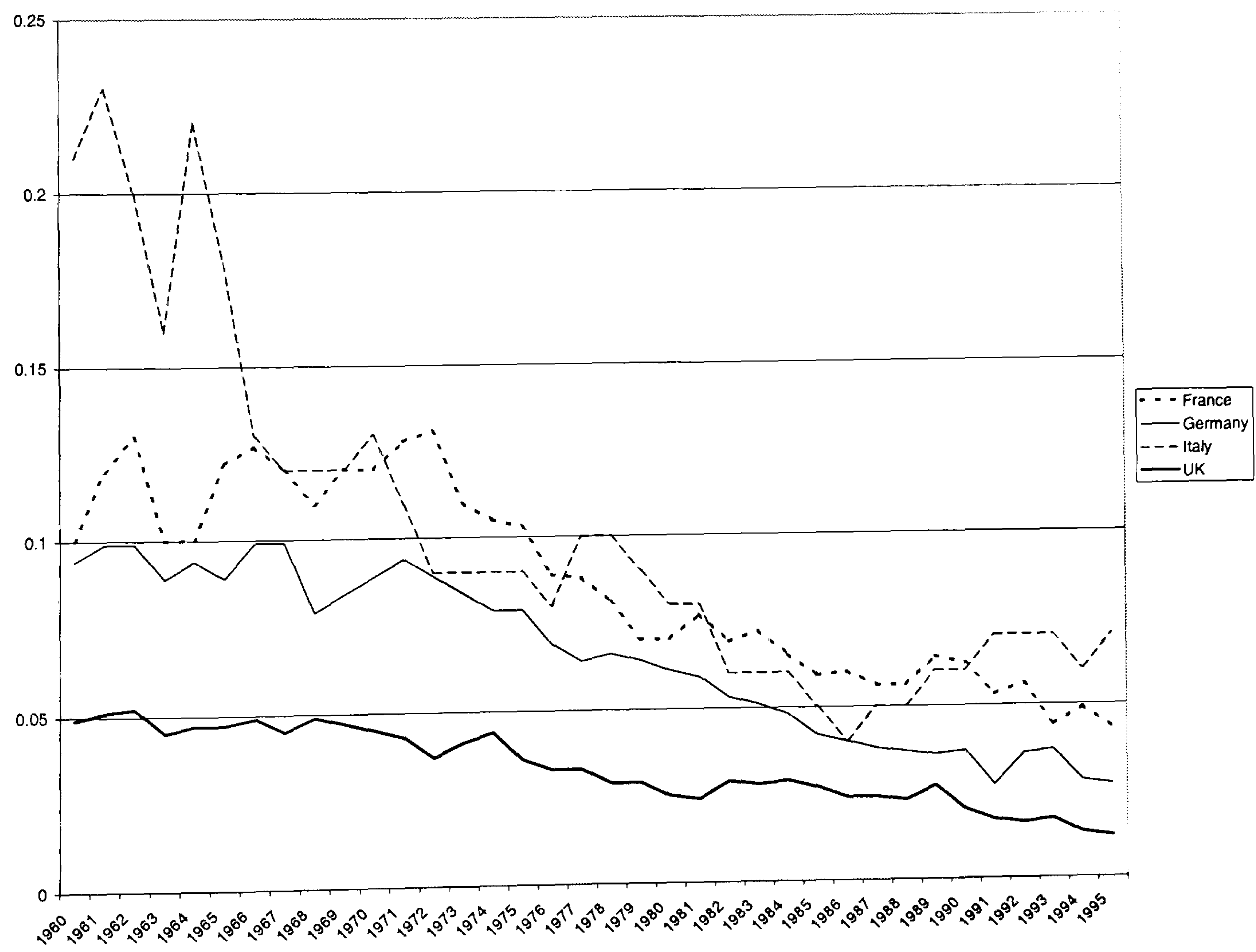




Chart 3. Rate of incidence of fatal injury, Austria and Nordic nations

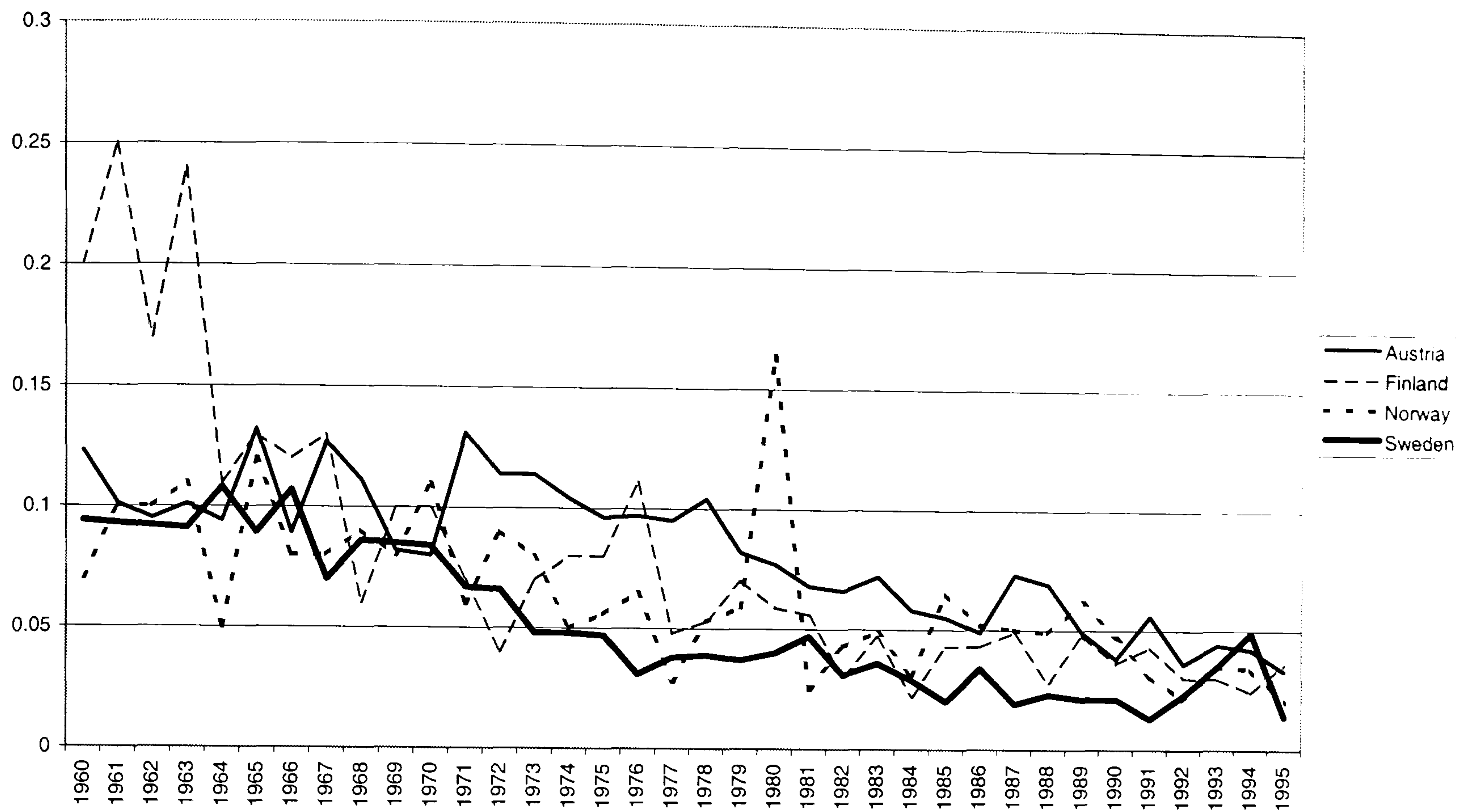
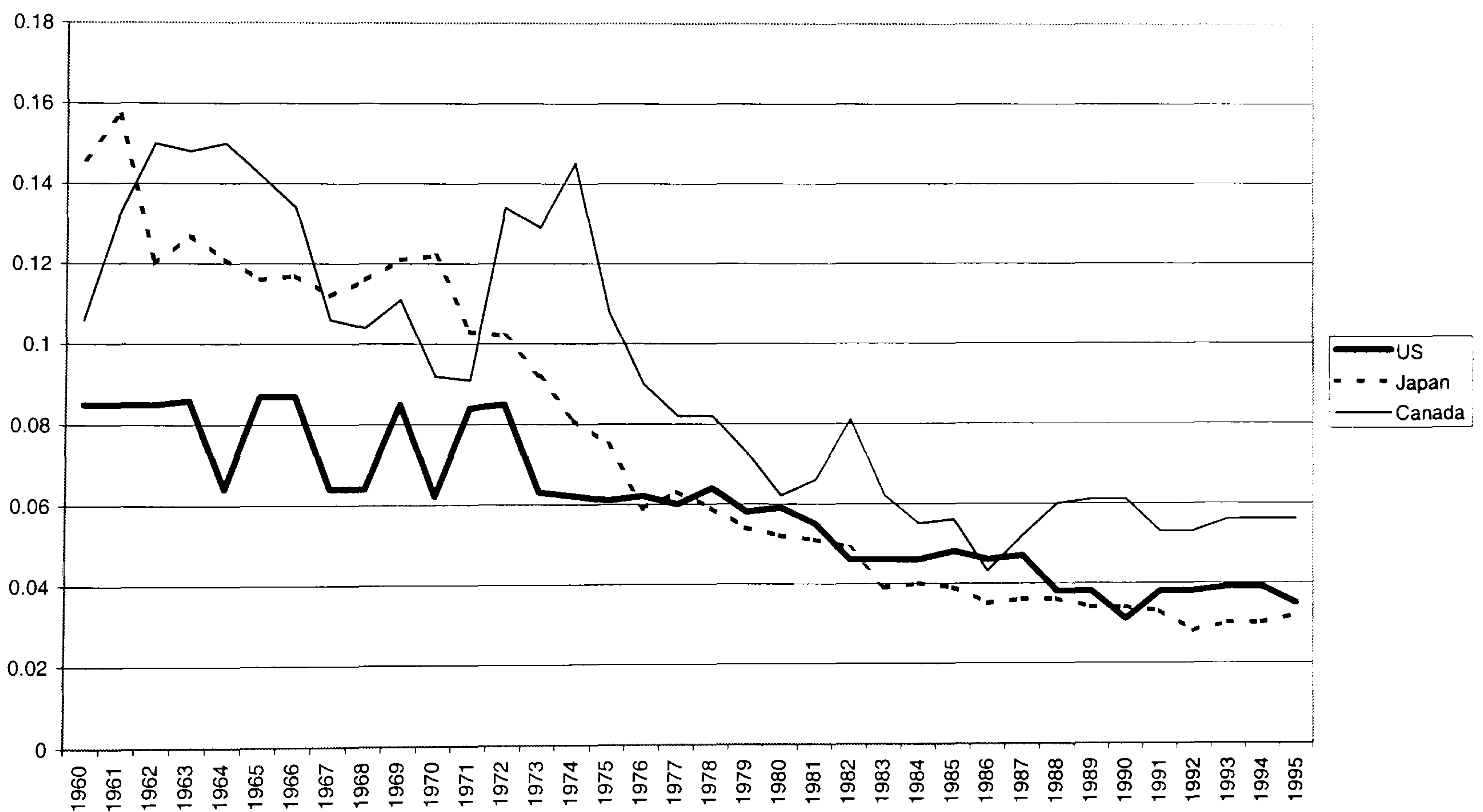


Chart 4. Rate of incidence of fatal injury, non-Europe



Most countries saw little reduction in the rate of incidence of fatality in manufacturing through the 1960s. The exceptions were Japan, which saw rates fall dramatically over 1961-2 before levelling out over the remainder of the decade, and Italy and Finland, which each saw very high rates in the first half of the decade and then much reduced incidence in the second half.

From the early years of the 1970s, there is much more of a suggestion of a common experience of a reduction in the rate of fatality. Even here, however, there are sharp differences in national experience, with Canada suffering a worsening record during the period 1970-4, and the rate of incidence in Finland showing erratic movements throughout the decade.

The deaths of Norwegian manufacturing employees resulting from the capsizing of the Alexander Keilland in 1980 punctuate the summary chart, and profoundly effect any analysis making particular reference to this year, even if referring to other countries in addition. From the early 1980s conceived more generally, there seems a slight levelling out in the reduction of incidence compared to that seen in the 1970s. Certainly, the general experience of the 1990s is clearly one of a levelling out of the tendency to reduction in the rate of incidence.

As regards comparative industrial safety, a number of national performances are worthy of particular emphasis. That apparent for Britain is outstanding, taking the period 1960-95 as a whole. From the mid-1970s, however, the British record was increasing matched by that of Sweden. (West) Germany appears to have had an unremarkable record. Japan's record is equally unexceptional, certainly if the period 1960-95 is considered in its entirety.



Despite the extensive efforts made to ensure the cross-national comparability of the fatal injury incidence rates derived, some doubts may remain about the validity of such comparative statements. A small number of studies relating to specific manufacturing activities do offer the possibility of some direct assessment of the tenability of the comparative patterns in fatal injury incident apparent from the sectoral data derived here.

### **Alternative indications of comparative fatal injury performance.**

Documentary evidence of the injury experience in the various national operations of multi-national manufacturers represents one benchmark against which the plausibility of the comparative performances apparent from the sectoral data derived here may be judged. Unfortunately, there are few such sources dealing with injury, and fewer still which consider fatality specifically. Nichols (1986) comments on the comparative extent of amputations in Ford's West German press shops in the 1970s, citing evidence that these were much more common in the company's German operations than in its UK plants. Grunberg (1986), in his comparative study of employment relations in the Peugeot plants at Poissy in France and Ryton in the UK, argues that Ryton's comparatively good injury record was representative of a more generally favourable British industrial safety situation. Although he implies scepticism about the meaning of the massive recorded injury differential apparent from company records between the two Peugeot plants, he presents a variety of evidence which suggests that Ryton remained a safer place to work, even after the neo-liberal resurgence of 1979. Yet although Grunberg (1986) refers to a single fatality at Poissy in 1978/9, this can hardly be taken as conclusive evidence of a relatively favourable British fatality performance.

However, Wokutch (1990) presents limited but fascinating evidence on the health and safety performance of several multi-national auto assemblers operating in both the US and Europe. By far the most detailed evidence relates to the injury experience at a US and a West German plant owned by one of the US based auto companies studied by Wokutch (1990). Although it is not stated in Wokutch's (1990) work, the numbers employed at the German plant, and the scale of production detailed at it, are consistent with it being General Motors' (GM) German flagship, Opel Rüsselheim.<sup>xlvi</sup> Though obviously of limited coverage, Wokutch's (1990, 199 & Table 6.4) evidence on the comparative injury performance of GM's largest German plant is suggestive at least. Over the period 1970-83 as a whole, 1 death was recorded at the US plant and 14 deaths at the German plant. Whilst the German plant employed many more workers, over this 14 year period, the rate of frequency of fatal injuries per million hours worked recorded for Opel Rüsselheim was still five times that at the US plant.<sup>xlvi</sup> Although the fatal injury performance of the German plant did improve markedly from the early 1970s to the early 1980s, the average performance across the entire period with which Wokutch (1990) deals can hardly be considered impressive.

Further indications of comparative fatality performance are available for European nations. The sustained studies of working conditions performed under the auspices of the European Coal and Steel Community (ECSC) constitute a carefully executed and genuinely comparative longitudinal statistical record covering the experience in contemporary member states (Statisches amt der EG, 1967; Eurostat 1973; 1977; 1986).<sup>xlvi</sup> Not only is the industry examined in the studies thus carefully defined, but it has clearly been of great significance as an employer and indeed, historically, in economic development. Moreover, much emphasis has been put in these studies on the cross-national comparative injury experience of the



plants. To ensure the comparability of the injury rates derived, a very specific conceptualisation of injury was applied.<sup>l</sup> The Eurostat (1986, 156) assertion that the statistics are 'harmonised' seems quite justified.

Together, the statistics on injury rates derived from the ECSC led studies span the entire period 1960-84, with perfect consistency for overlap years in the statistics presented in the successive *Statistisches amt der EG* and Eurostat publications. Particular detail concerning the coverage of the investigation and about its findings are available for the period 1960-72, during which the 400-500,000 workers employed in plants covered by the study constituted the bulk (almost 80%) of the continental European ECSC iron and steel industry's exposed (i.e. manual) employees (Eurostat, 1973; Eurostat, 1983). Almost 2000 industrial fatalities are recorded in iron and steel during this period 1960-1972, around 1500 of these occurring in plants located in the big 3 continental iron and steel producing countries – West Germany, France and Italy (Eurostat, 1973). In the light of the number of employees whose workplaces were covered by the studies, and indeed of the number of deaths recorded, the fatal injury rates in iron and steel published for these countries over the course of the study, and particularly in the earlier years, should be regarded as a very reliable guide to the comparative historical evolution of the risk of death at work in a key branch of manufacturing.

The results of the studies for the early period 1960-5 show rates of frequency of fatal injury which are consistently similar in West Germany, France and Italy.<sup>li</sup> Over this six year period as a whole, and across establishments of all sizes, the average rate of frequency of fatal injury per million hours worked was 0.17 in West Germany, 0.18 in France and 0.16 in Italy (derived from *Statistisches amt der EG*, 1967, 39 Table V). The findings for the period 1968-72, during which the study covered a somewhat smaller number of workplaces and workers, but concerning which minutely detailed results were still published, show a very



similar situation to that of the earlier period, with West German industry generally characterised by rates of frequency of fatal injury a little greater than those in Italy, but a little lower than those in France (Eurostat, 1973, Table VII).

Thereafter, the ECSC studies of industrial safety in iron and steel seem to have been somewhat smaller scale, covering fewer of the various nations relevant establishments, and rather less detail on the basis of the studies is available. However, national breakdowns of the rate of frequency of fatal injury derived from these studies were published. Results for the period 1974-5 show that iron and steel establishments in West Germany and France experienced a substantially higher rate of fatality than both the Italian establishments and the newly participating UK establishments. Over this two year period, across all establishments surveyed, West Germany and France both saw an average rate of frequency of fatal injury of 0.13 per million hours worked, whilst those in Italy and the UK were 0.10 and 0.09 respectively (derived from Eurostat, 1977, Table III). Eurostat (1986, Table 3.5.13) suggests that the West Germany's comparative safety performance deteriorated further over 1976-84, with the nation's iron and steel establishments experiencing a rate of fatality only falling below the EC average in one year of the period. Over the eight year period 1977-84, through which frequency rates were consistently calculated on the revised basis of the hours of all employees in the industry, rather than those of manual workers alone, West German establishments saw an average rate of frequency of fatal injury of 0.08 per 1000000 hours, compared with average frequency rates of 0.05 in France, 0.07 in Italy and 0.06 in the UK (derived from Eurostat, 1986, Table 3.5.13).

In sum, it is clear that through the 1960s and into the early 1970s the iron and steel industry in West Germany was far from outstandingly safe, gauged by the rate of frequency of fatal injury, as compared to the industries in France and Italy. Moreover, the smaller scale ECSC studies of later years suggest that the comparative safety performance of the West



German industry deteriorated from the early/mid-1970s, showing West German iron and steel as the most perilous of the European industries by the late 1970s and early 1980s.<sup>111</sup>

The concerns of the regular ECSC studies were reflected in one-off studies of the paper, glass and rubber industries (Statistisches amt der EG, 1969). The study of the paper industry over the course of 1966 covered 450 establishments with 130,000 manual workers across West Germany, France and Italy. It found that the frequency rate of fatal injury, per million hours worked, in West Germany was very similar to that in Italy, and massively lower than that in France. However, these rates were calculated on the basis of a total of only 13 deaths recorded across the 3 countries. The study of the rubber industry over the year 1967 also suggested that West Germany and Italy shared a similar experience, being much safer than France, but this on the basis of only 5 fatalities across the 230 featured establishments of these 3 most populous EC countries. The study of the glass industry of 1967 found that the rate of fatality in West Germany was similar to that in France, with both countries' industries infinitely more perilous than that in Italy, in which there were no fatalities. But again the number of fatalities on which the results were predicated was very small - a mere 10 across the 330 establishments in West Germany, France and Italy covered.

These one-off studies conducted by the EC recorded only 28 industrial fatalities across the paper, glass and rubber establishments covered. To the extent that the small number of fatalities implies a rate of frequency of death which is low compared with that in iron and steel it is reasonable to conclude that these industries were relatively less perilous in the Europe of the mid-1960s. But the very limited number of deaths recorded in these one-off studies of paper, glass and rubber cautions against even tentative generalisations about the comparative safety of manufacturing industry as a whole in the various countries.

Given the limited coverage of these various studies, only a limited substantiation of the meaning of the fatal injury incidence rates derived in the present study for the



manufacturing sector as a whole is possible. However, the results of the ECSC studies of iron and steel are worthy of particular consideration. There is at least some corroboration of the comparatively good fatal injury performance of Britain, and of an industrial fatality record for West Germany which is at best unexceptional. The various indicators of the incidence of fatal injury are at odds with any conception of Western Germany as a model of capital-labour co-operation, or social partnership, featuring the 'high-road' employment relations celebrated by Streeck (e.g. 1992).

### **The logic of industrialism, globalisation and convergence.**

The comparative historical data on industrial safety in manufacturing assembled here allow a statistical assessment of the evidence of societal convergence in fatal injury experience ranging across eleven leading industrial nations. Two statistical measures of the spread of data are used here to characterise historical developments in the cross-national variation in experiences of working conditions: standard deviations and coefficients of variation. These measures of cross-national diversity are calculated for fatal injuries for each year of the 36 year period 1960-1995 spanned by the data field. The standard deviation (SD) is a familiar gauge of the spread of data. The coefficient of variation (CoV) is simply the SD divided by the cross-national mean of the indicator in the corresponding year, being thus a standardised SD which takes account of the average magnitude of the data analysed. This latter standardised gauge, of the relative spread of the data around the mean, is used for example in the assessment of income convergence in research on economic growth, an area of study in which the series analysed tend to be strongly trended.

The statistical analysis of convergence with these two gauges of cross-national diversity has the advantage of being robust to any enduring national idiosyncrasies in the



collation of statistics on fatal injuries which have not been ironed out, even by the extensive efforts to standardise the data detailed above. The historical development of the gauges of cross-national variation in fatal injury incidence in manufacturing is represented Charts 5 and 6 below. For completeness, each chart shows the pattern of development of the gauges of spread with the eleven countries under study here treated as both a sample, and as a universe, for the purposes of the calculation of the standard deviation. Though simple, the charts tell a fascinating story about the historical development of in societal diversity with regard to fatal injury in manufacturing.

Chart 5. Standard deviation of the rate of fatal injury.

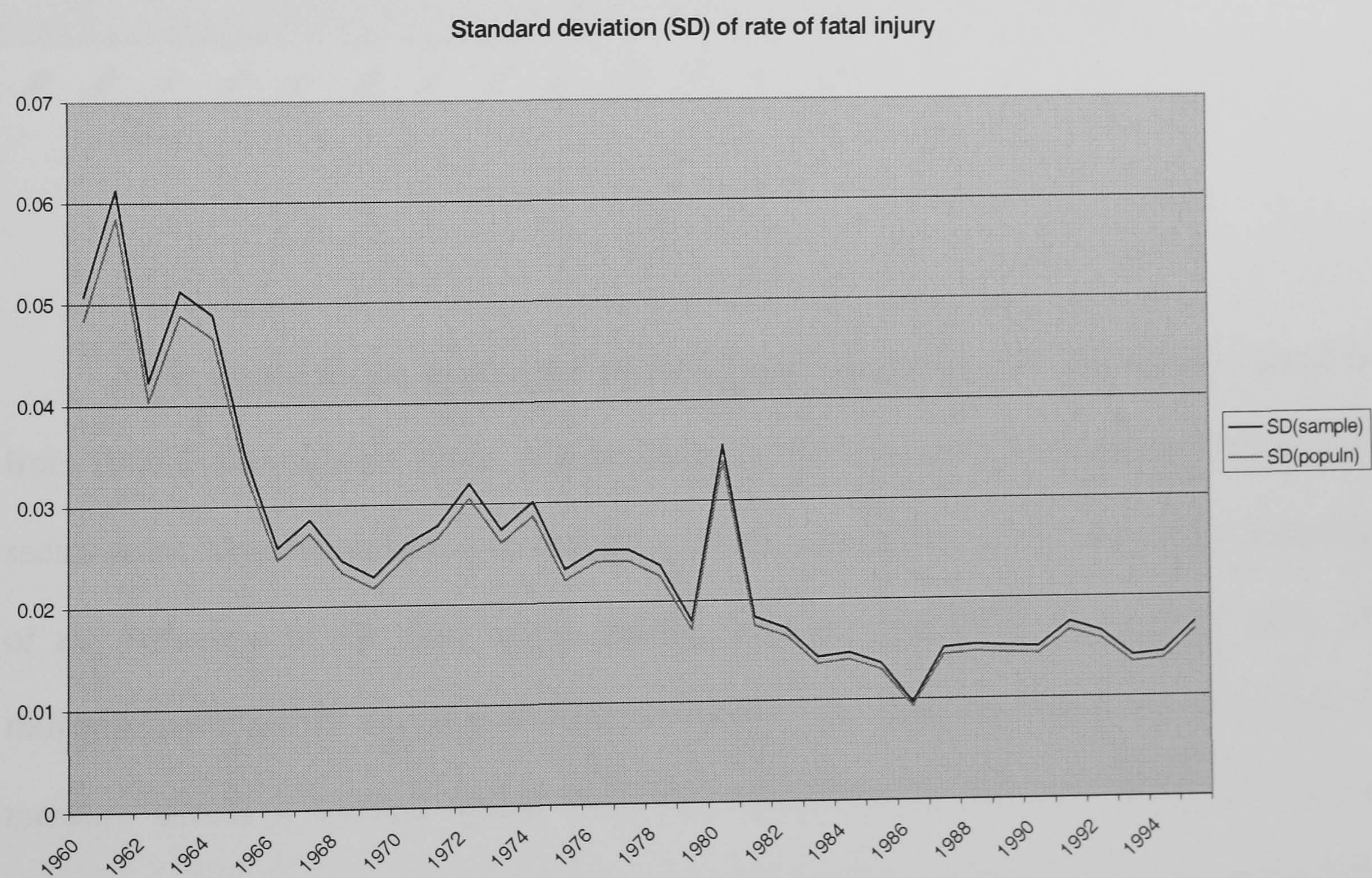
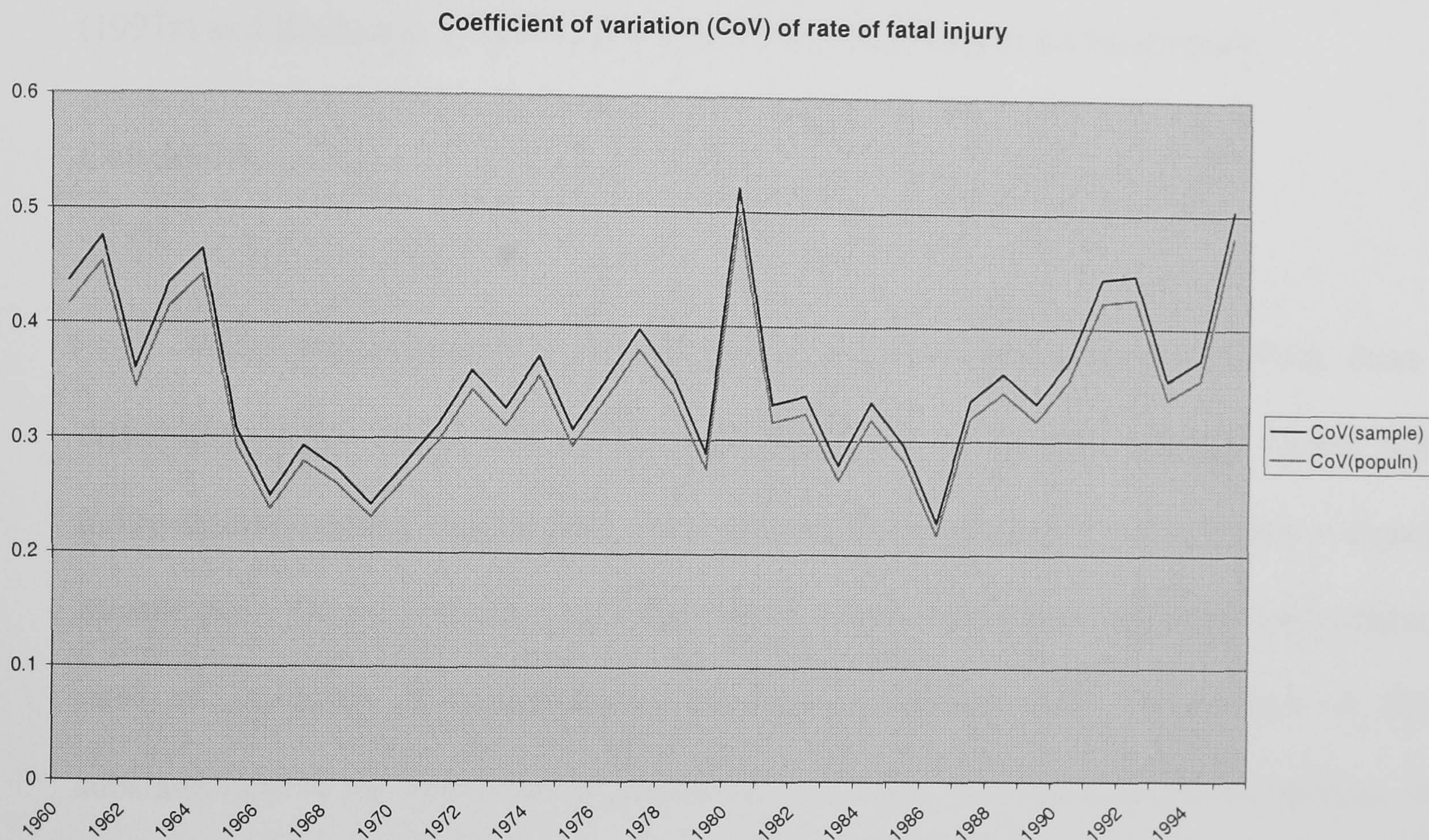




Chart 6. Coefficient of variation of the rate of fatal injury.



With regard to the experience of fatal injury incidence, the SD shows a rapid fall from 1960 to the mid-late 1960s, and thereafter a more complex development. Though there seems some long-run tendency to reduction in the succeeding years, there is no suggestion of any reduction in the most recent decade, from the mid-1980s to the mid-1990s. The movement of the CoV suggests no long run tendency to reduction whatever, and indeed the measure shows a marked upturn from the mid-1980s to the mid-1990s. Taking into consideration the patterns of development of both the SD and the CoV, it seems clear that any tendency to uniformity in national experiences over the long haul which is present is down to a broad long-run tendency for fatal injury incidence to approach zero. Critically,



however, there is no suggestion whatever, in the movement of either the SD or the CoV, of convergence of injury experience in the most recent period, from the mid-1980s to the mid-1990s, during which the forces of globalisation have presumably been at their most intense. The ubiquitous forces described by authors such as Womack et al (1990), Crouch & Streeck (1997a) and Kochan et al (1997) seem to be of limited import for fatal injury.

## **Conclusion.**

Industrial safety is a critical aspect of work humanization. Whilst there are difficulties in the construction of comparable data on fatalities on the eleven leading industrialised nations treated here, they are not nearly so severe as to render comparison meaningless. On the contrary, with the careful consideration exemplified above meaningful rates of incidence in manufacturing can be assembled, with few caveats. A limited substantiation of the comparative patterns of fatal injury incidence suggested by these series is possible from the fragmentary evidence available concerning specific manufacturing branches. The statistical analysis of comparative historical developments, which is in any case insulated from the effects of any remaining enduring national idiosyncrasies in the collation of official statistics, shows that there is no relentless homogenisation of fatal injury experience across the manufacturing sectors of the eleven nations under study here. In particular, it shows that over the final decade spanned by the data field, the period 1985-95, there was no evidence whatsoever of a societal convergence in fatal injury experience. The pattern of development contradicts common presumptions that there is an accelerating convergence of national workplace employment relations.

## **5. Average annual hours of work in manufacturing.**

This chapter explores the official statistics available on working time in the manufacturing sectors of leading industrialised societies. It argues that the average annual hours actually worked represent, in principal, much the best indicator of working time. Despite the interest of a number of agencies in annual hours, existing data are not unproblematic; the construction of cross-nationally comparable data on average annual hours actually worked requires careful consideration. The accuracy of the series assembled here as indicators of comparative historical developments in the working time of manual manufacturing workers specifically is considered. Finally, the evidence of an ongoing homogenisation of average annual hours across national borders is considered.

### **Historical developments in working time under capitalism.**

It seems a commonplace presumption in many social and academic circles, at least in the Anglo-Saxon world, that capitalism has seen the easing of the burden of work (Schor, 1992). Yet there is much evidence to suggest that before the development of capitalism the hours spent at work were substantially shorter than they became as it took hold. A variety of sources suggest that the typical annual hours of labour in the UK doubled from around 1500 in the thirteenth and fourteenth centuries to over 3000 at their height in the mid-nineteenth century (Schor, 1992, Figure 3.1). As capitalism developed, the cultural, social and economic alternatives to entering capitalist employment were eroded, and the employers to which those on the labour market were subject sought to make individuals employment choices an essentially all or nothing affair, lengthening the hours of those at work. From the



mid-nineteenth century, determined working class protests about the length of working time seem to have been effective, and a gradual shortening of working hours began (Schor, 1992). Maddison (1982, Table C9) suggests that the average annual hours of workers followed similar paths in most capitalist countries from the second half of the nineteenth century into the early twentieth, declining from around 2950 hours in the year 1870 to around 2600 by the outbreak of World War I.

### **The current debate on working time.**

Hours of work are once again on the political agenda in many advanced capitalist countries, although more perpetually in some than in others. In the US, whilst Juliet Schor's (1992) book 'The overworked American' seems, to judge by its sales, to have struck a chord, there is little sustained discussion of the issue. In Britain, although the TUC periodically pushes the exceptionally long hours worked by British employees back on to the political agenda (see, e.g. Atkinson, 1996), there is rather little public debate. The situation is very different outside the Anglo-Saxon world. The European Trade Union Confederation (ETUC) seeks coordinated working time reductions (Bosch et al, 1994). The regulation of working hours via the Working Time Directive is a central objective of the European Commission's Social Chapter, and although the critical detail of the implementation of the framework is in the hands of national governments, it seems that the regulations will serve some role in underpinning minimum standards of working conditions across the European Union as a whole. At the same time, recent coalition governments in France and Italy, influenced particularly by their reformed communist participants as well as by union concerns, have shown interest in the further reduction of hours within their respective national borders.



Although the EU stresses the importance of social regulation of working time for its own sake, the national governments of Europe tend to place emphasis elsewhere - on jobs. In line with current governmental priorities, the principal objective professed by the many unions in European countries now pursuing reductions in working time is the safeguarding or creation of employment. As Therborn (1986) notes, there is a prevailing, though far from universal, trade union and left wing view that shorter hours of work can sustain lower rates of unemployment. Discussion of the opportunities for work sharing or employment spreading have dominated debates on hours since the late 1980s. Whilst it is clear that unions across Europe are now profoundly concerned with protecting the jobs of their members, the longstanding stress placed by labour movements on working time suggests that unions do not regard employment preservation or creation as the only benefit of shorter hours of work.

It is natural that unions seek to justify any changes they desire in terms which are most likely to invite a sympathetic hearing in the public arena. In an era of general public concern about unemployment the focus of union argument on the employment effects of reductions in working hours should not be taken to suggest that unions do not continue to hold dearly other objectives; ambitions which may often be viewed by employers, and indeed the public, as unrealistic. Interestingly, as we shall see, it was Sweden, a country where the unions and broader labour movement have historically been rather sceptical about the impact of shorter hours on employment (Therborn, 1986), and in which low unemployment had nevertheless long been allied with growing labour force participation rates, which saw remarkably short actual working hours in the 1980s. The sustained efforts by the Swedish labour movement which brought about such short hours had little to do with the bolstering of employment, which was already effectively full. It was the issue of the quality of working life which motivated the action.



## **Do hours matter?**

Blyton (1989), in his review of sources of statistics on working hours, stresses the historic centrality of demands for shorter hours of work as a rallying cry to unions and, to the extent it ever cohered, the union movement in Britain, the first industrial nation. Clegg (1985) underlines the concern shown by British unions about working hours in the early twentieth century. Demands for shorter working time have periodically re-emerged in all the advanced industrial countries which feature in this thesis, although the intensity of feeling and determination demonstrated has varied from one country to another as well as over time (see, e.g., Esping-Andersen, 1990; Schor, 1992; Berggren, 1994; Franzosi, 1995; Bosch & Lehndorff, 1995).

The most celebrated pursuit of the reduction of working time has been that sustained by the (West) German union movement. Led by the metal workers union, IG Metall, German unions and works councils have regarded the reduction of working hours as a central plank of their attempts to humanise industrial work. From at least the early 1970s, German union and works council representatives have sought to contain work intensity, and to stem work-related stress, by targeting working time and extending leisure. The pressure applied has resulted in a series of company level decisions to introduce personal relief time and to lengthen paid breaks. Alongside these company level developments, sectoral negotiations have several times secured the extension of individual vacation entitlements (Jurgens et al, 1993, 119-20).

Yet all national labour movements have shown at least a sporadic interest in the issue. Concessions have been sought in all the arenas which unions inhabit in advanced industrialised countries. Shorter hours have been pursued in peak level negotiations, through

statutory reforms, in industry bargaining, through works council activity and through negotiations at the level of plants and workshops. In the Nordic countries, Swedish manual workers' unions, and their confederation, LO, have led the struggle in pursuit of shorter hours (Kjellberg, 1992; Berggren, 1994). In Southern Europe, the Italian metalworking unions of the CIGL and CISL federations spearheaded a broader shortening of hours from the close of the 1960s (Franzosi, 1995). Outside Europe, in Canada, the US, and indeed in Japan, hours have, at particularly junctures, been central to unions' negotiating agendas (Berggren, 1994).

The concern to humanize work has been quite generally apparent in the arguments advanced by unions in support of shorter hours across all these diverse societies. Quite generally, unions regard shorter hours of work as critical for the achievement of a balance between work and leisure which improves workers' quality of life (e.g. IRS, 1997a; 1997b). A number of academic commentaries elaborate the pertinence of working hours to employee well-being. Some contributions also highlight the significance which hours of work can have as an indicator of the nature of the workplace employment relationship more broadly.

The concern of the German IG Metall, and DGB, to which the metal workers' union has historically been central, about the stress engendered by long hours of work is shared by union movements in other nations. Stress is widely regarded as of critical importance to employee well-being, in large part through its implications for health and safety (IRS, 1997a; 1997b). Moreover, the role of long hours in provoking occupational injuries has been specifically highlighted by the British TUC, for example, in comments which echo the suggestions of early statistical work in France and Germany on the pattern of injury incidence through the working day (Rabinbach, 1996).

Esping-Andersen (1990) stresses the importance of employees' effective access to leave at particularly stressful junctures. He highlights the significance of access to parental



leave, to sick leave, to leave to recover from work related injury and to leave to look after sick children for employees' personal reconciliation of work with other aspects of life. Bosch et al (1994, Table 4) show the extent of cross-national variation in absence, which averaged from as little as 35 hours per year in Japan to 230 hours per year in Sweden in 1981. In this sense, at least in part, hours actually worked are an expression of the ability of employees to take time off when they most need to (see also Berggren, 1994). Actual hours worked of course also reflect the extended time spent away from the world of work on personal vacation or during any closure period. Green (1997) stresses the particular importance of an extended holiday from the daily routine and pressures of work to employees' well-being.

Conversely, hours worked reflect in part the extent of employers' attendance demands on employees, in which there is much cross-national variation (Berggren, 1994). Recent Lemsip advertisements for cold and flu remedies (Lemsip) run in the UK have reflected employees fears that staying away from work when ill may put their jobs at risk. Historically, however, it is Japan which has been comparatively exceptional with regard to attendance at work. There is no provision for sick leave in Japanese collectively bargained agreements (ILO, 1995, 153); employees are expected to regard time off sick as part of their holiday entitlement (Wokutch, 1992, 98). Moreover, employees are under intense pressure not to take their full holiday entitlement (Berggren, 1994), and often retain a good proportion of their holiday entitlement in case they fall sick (Bosch & Lehndorff, 1995, 7-8). In practice, Japanese employees, on average, take a little over half of their formal entitlement, and rather less in smaller companies (Blyton, 1989; JETRO, 1994).

Hours worked also reflect overtime, a component whose significance can easily be underestimated (Blyton, 1989; Bosch et al, 1994). In the UK, individual employees have historically expressed enthusiasm for overtime work. But often overtime reflects very

participation at work. Bosch and Lehndorff (1995) suggest that movements in hours in auto assembly in recent years have reflected the success of unions efforts to win shorter hours in exchange for an agreement to greater working time flexibility, implying that comparatively short hours may reflect effective representative participation.

By all the various routes cited here, hours of work may be viewed as embodying the extent to which industrial workers are able to reconcile their work with life (Esping-Andersen, 1990). There is a clear danger that employees essentially live to work, with their 'leisure' merely the space to recover to ensure they are more productive when the shift begins again (see Linhart, 1978). Hours of work indicate the space left for a social and community life (Schor, 1992). Moreover, as some of the observations above suggest, it seems that the comparative hours worked by industrial employees may bear some relation to the richness of the experience in the workplace itself – to the possibilities of life during the hours of work.

In this context, actual working hours are treated here as, in principle, a fairly unambiguous indicator of work humanization. Shorter working hours are regarded as constituting superior working conditions. This is not to deny that shorter working hours may in some respects be associated with characteristics of the employment relation which are unfavourable to employees. Most specifically, it is not necessarily to contradict the economic view that shorter hours are won at the expense of earnings.

When considering issues of working hours, economists' reflex is to imagine an individual's trade-off between hours worked and income earned. Indeed, the relevance of the characterisation in some circumstances is obvious to the extent of triviality. For any particular occupation, in any particular company, within any set of national borders, part time workers receive a lower total remuneration than do full timers, and those who do not work paid overtime receive less remuneration than those who do. In this context, the



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In this context, actual working hours are treated here as, in principle, a fairly unambiguous indicator of work humanization. Shorter working hours are regarded as constituting superior working conditions. This is not to deny that shorter working hours may in some respects be associated with characteristics of the employment relation which are unfavourable to employees. Most specifically, it is not necessarily to contradict the economic view that shorter hours are won at the expense of earnings.

When considering issues of working hours, economists' reflex is to imagine an individual's trade-off between hours worked and income earned. Indeed, the relevance of the characterisation in some circumstances is obvious to the extent of triviality. For any particular occupation, in any particular company, within any set of national borders, part time workers receive a lower total remuneration than do full timers, and those who do not work paid overtime receive less remuneration than those who do. In this context, the



possibility that shorter hours of work are cross-nationally comparatively associated with other aspects of the employment package which are unfavourable to employees, particularly lower pay, cannot be denied a priori. At the same time, however, the possibility that shorter hours are cross-nationally associated with greater employee purchasing power, as Schor (1992) suggests, should not be discounted. Several authors have suggested that individuals' contemporary enthusiasm for overtime in the UK and US is the result of low prevailing hourly wages, just as was the acceptance of overtime and weekend working across Europe in the 1950s (e.g. Bosch et al, 1994).

The concern of this thesis, however, is with work humanization. For all the reasons outlined above, it seems altogether reasonable to regard shorter hours, of themselves, as being of benefit to employees, and to proceed on this basis. This is to set aside the issue of the relation between comparative hours and earnings – the nature of the counterfactual of the emergence of shorter hours in a nation's manufacturing sector. It is relatedly to suspend judgement on the sense in which the components of the comparative employment package are a matter of choice for the individual employees who comprise a nation's workforce. A priori presumption about the manner in which the employment relation is structured is rejected in favour of an empirical exploration of a particular, but critical, aspect of the employment package.

### **Gauging working hours in manufacturing industry.**

Establishing the extent of working time is not unproblematic. As Blyton (1989) remarks, cross-national comparison of working time is impeded by the different bases on which hours may be expressed, and indeed the variety of terms employed to denote series collated on identical, or near identical, bases. This is not only the case in media treatments of



the issues, but also in the work of statistical agencies and academic researchers. Most references are, however, to some conception of weekly hours, although the precise basis of the calculations do vary, and indeed are frequently rather unclear. Examples are numerous.

The French Ministère du Travail et de la Participation (1979, Tableaux A1 & A3) cites figures on average weekly hours of work. The figures relate only to full time employees. They are annotated as referring to the weekly hours '*effectivement offerte*' (p.9); an ambiguous phrasing. Further notes explain that the figures are derived from prevailing collective agreements on working time and from statistics on the hours of overtime and of short time working, but do not take account of variations in hours of work which are deemed individual (p.10). Thus, no allowance is made for absence due to sickness or other absence, to strikes, or resulting from mechanical breakdowns or accidents. No explicit mention at all is made of the treatment of holidays. The statistics published in this source correspond with the historical statistics on what is readily rendered as the 'effective weekly hours of work' in an alternative official source, which carries no such detail on the basis of the calculations (INSEE, 1990, Tableau 43A).

Eurostat (1980; Table III/1) carries figures on the average weekly hours of manual workers for the nine nations then members of the EC, including France, Germany, Italy and the UK. The accompanying notes explain that the figures relate to the average weekly hours worked by those present at work during the reference week, a week which excludes public holidays. The reader is warned of the possibility that the basis of the figures may vary from one country to another, but some effort was obviously made to achieve comparability. The weekly hours 'normally' worked – apparently contractual hours – provide the starting point. Overtime hours are, at least in principle, taken into account, as are hours not worked for technical or economic reasons. Those who were on holiday for part of the week in question, or who were on strike, were excluded from consideration. Evans (1975) notes that EEC



gauges of working time have historically been based around the notion of the 'hours of work offered to the worker' which is present in these Eurostat derivations.

More recent statistics on weekly hours from European sources seem to further privilege the notion of the 'usual' or 'normal' hours worked. Again, these are apparently the basic or contractual hours to which an employee is committed. Thus, Eurostat (1995a, 190) features figures on the 'usual length of the working week' of full time workers. Similarly, Eurostat (1996a, 136-7) features figures on the 'usual weekly working hours' of full time employees. Meanwhile, Eurostat (1996b) presents statistics on the 'normal/usual weekly working hours', but also seeks to take account of the *statutory* holiday entitlement. Finally, Eurostat (1996c) features figures on the 'usual' weekly hours of employees (p.164-5; 168-9), but also on what are termed 'actual' hours (p.164-5), based on one reference week. No further details of the bases of the figures is provided in this last publication. Similarly, the ILO regularly publishes figures on 'weekly hours' in manufacturing activities in its Yearbooks, and now features them on its web-site. Whilst these figures purport to represent actual as against paid hours for at least some nations, even in these cases the sophistication of the account taken of the components of working time is unclear.

These few examples are representative of much of the published statistical information on hours, which generally features figures which constitute a rather poor and uncertain guide to the hours actually spent at work. It is at least clear that the conventional gauges of working hours so often cited do not reflect all the components which account for the time employees are at their place of work. The available data on 'normal weekly hours of work', 'weekly hours' and even in many usages 'weekly hours effected' refer essentially to the hours contracted by the employer, reflecting unduly the prevailing collective agreements on some standard working time. Such indicators tend to neglect the vital role of some or all of downtime, short time working, overtime working, public holidays, personal



vacations, absence due to sickness, leave on personal or parental grounds, and indeed study leave in shaping the time spent at work. The effect of a focus on usual or standard hours can be seen most clearly in comparisons of the annual contractual hours apparent from collective agreements and the hours actually worked in different nations' industrial sectors. As Blyton (1989; Table 7.5) shows, in the mid-1980s average annual contractual hours paid by employers for industrial workers in Sweden were, at 1800, longer than the 1778 hours contracted for in the UK. Yet every serious attempt to gauge actual hours worked shows those in Sweden to be markedly shorter at this time, as Berggren (1994) notes.

The task in the present thesis is the construction of a series which reflects the average hours *actually worked* by employees in manufacturing industry - the full extent of their working time commitment. It seems clear that gauging the hours actually spent at work is most readily achieved by estimating hours over the course of the year. This allows account to be taken of all the sources of deviations in hours worked from the 'normal hours' of work which although often quoted are almost meaningless as an indication of comparative historical working time.

Yet there is still no generally accepted set of estimates of annual hours in the manufacturing sectors of advanced industrial societies. At least until recent years, there has been surprisingly little research done to establish the pattern of developments in average annual hours of work. Armstrong et al (1991, 174) comment that the data available for the 1960s and early 1970s were 'sketchy' at the time they wrote. Maddison (1982; 1991) pieced together historical estimates for as large a proportion of the labour force as he found possible, admitting that the comparability of the bases of the statistics he uses for the various countries is far from clear, and commenting in the later work that the working hours figures he presents are 'among the weakest of those used here' (1991, 255). In more recent years a number of authors with particular purposes have derived snapshot estimates of annual hours



worked spanning various economic activities in various sets of countries. Much of this work seeks to contrast working time in Europe and in Japan, in the context of debates around lean production systems.

Berggren (1994, 83), in his study of developments in work organisation in the Swedish auto industry, carries estimates of annual average hours actually worked in engineering in a number of countries for 1988. He estimates annual working hours of 1500 in Sweden, 1580 in West Germany, and 1840 in the UK, and suggests that in Japan in the second half of the 1980s, the 2365 hours worked by Toyota's employees were not atypical (Berggren, 1994, 35). Roth (1997, 124) carries estimates of average annual hours in auto assembly in the 1980s which are drawn from the International Motor Vehicle Project (IMVP). These put the annual hours of West German auto assembly workers at 1599, markedly below the 2189 reckoned for Japanese assemblers by IMVP researchers.

Bosch's (1995, 33) studied calculations of actual working hours in the assembly plants of leading auto companies in the Japan of 1990 suggest average annual hours for production workers of 2200-2500 in all assemblers but Honda, which features work-years of fewer than 2000 hours. He stresses the pertinence to these hours of the common practice amongst Japanese car workers to take holiday leave when sick and, moreover, the intense pressure workers are under not to use their entire holiday entitlement. In these auto assemblers, 95% of employees are present at any one time, compared to an average of 75-80% across Europe as a whole (Bosch, 1995, 32).

Estimates of cross-national comparative yearly hours in manufacturing and production industries prepared for the Japanese government also demonstrate the extent of annual hours worked in Japan, and that only annual hours in the Anglo-Saxon world come close. These estimates, for 1991, put annual hours at 2080 in Japan, 1902 in the UK, 1943 in



the USA and 1582 in Germany (JETRO, 1994). Overtime accounts for approaching 200 hours in the three longer hours nations.

Schor (1992, 2; 153; 215 n.16) stresses the extent of the cross-national comparative differences in working time by expressing them in terms of working weeks. Referring to 1988, she comments that in manufacturing industry Japanese workers laboured for an equivalent of 6 working weeks more per year than US workers, who themselves work 8 weeks more than West Germans and French and 11 weeks more than the Swedes. The unpublished 1989 US Department of Labor Bureau of Labor Statistics (BLS) study which Schor cites as the basis of her calculations is obviously an early product of the BLS programme to derive indices for a number of nations' experience of annual hours which features heavily in the next section. To underscore the impression given by the BLS figures, Schor (1992, 153; 215n16) also cites Hideo Takahashi's estimate of the work year in Japanese manufacturing – some 2111 hours in 1987. The available statistics on hours of Japan's office workers in the late 1980s suggest that there was a similar differential between the work years of white collar workers in Japanese versus US manufacturing as between the work-years of blue collar staff in the two countries at this time (Schor, 1992, 154).

In their study of developments in working conditions in Japan, Takezawa et al (1982, 16) suggest that the average hours actually worked in industry (i.e. excluding services) declined from 194.8 per month in 1955 to 177.4 per month in 1979, constituting a fall in annual hours from 2338 to 2129 in this period. Annual hours in electricals, where workers had led efforts to reduce hours, were, by 1979, slightly lower than this all industry average, at a little over 2000 (Takezawa et al, 1982, 66). The reduction in hours was slow in Japan, even in the electrical industry. In the early 1960s, workers in this industry focused on securing a 5 day week, and by the mid-1960s some companies allowed every other Saturday off. It wasn't until 1970 that even all major companies operated a 5 day week as a matter of



course (Takezawa et al, 1982, 66). There is, moreover, much evidence to suggest that the bulk of Japanese workers, employed in small and medium sized companies, have always endured much longer hours than those in the larger companies (Takezawa et al, 1982, 175).

Eurostat (1989) carries rather sporadic series on annual hours worked per employee for members of the EC between 1972 and 1984. For 1984, these estimates show annual hours worked in manufacturing of 1701 in West Germany, 1679 in France, 1727 in Italy and 1876 in the UK. Annual hours across all industries are estimated as almost identical to these in each country case. Very similar figures are also presented for 'Metal manufacturing, mechanical, electrical and instrument engineering', specifically, within the manufacturing sector.

Recently, Eurostat has undertaken aggregate work which represents a determined effort to gauge the extent of working time within the EU. Eurostat (1995b) features estimates of the annual hours of full-time employees in general and for those in industry for (West) Germany, France, Italy and the UK over the period 1983-1993. The estimates for 1993 put the annual hours of full time employees in industry at 1708 in Germany, 1808 in France, 1794 in Italy, and 1971 in the UK. The estimates for all full-time employees are generally very similar, differing from those of full-time employees in industry by much the largest margin in the case of Italy, where by 1993 the working time of the typical Italian employee were reckoned to be some 90 hours shorter per year than that of the average industrial Italian employee.

Eurostat's intensifying institutional interest in working hours is not unique. The last few years have seen an upsurge in interest in hours on the part of international bodies. The OECD regularly publishes figures purporting to represent developments in the economies of OECD members as entireties. Other organisations have estimated for more recent years the average number of hours worked annually by differing categories of the employed, often



though only providing a snapshot of the cross-national comparative situation in a particular year. The present study draws on measures of hours collated by national and international agencies which purport to represent the hours of all those employed in manufacturing. It does not attempt to capture developments in the working hours of distinct groups of employees within the manufacturing sectors of the nations treated.

With the prominent exception of recent Eurostat work (e.g. 1995b), most available estimates of annual hours do not discriminate between the annual hours of full and part-time workers, referring to all employees or employed. This seems partly because meaning of the part-full distinction begins to break down in cross-national comparative work. Jobs termed part-time in some countries do not involve approximately half full-time hours as is common in Anglo-Saxon countries, but as many as three quarters of the hours of full-time workers. Within the European core, the greatest difference in the average hours actually worked of part-timers across the economy as a whole was that between those in the UK and Italy, 16.9 as against 26.8 hours per week in 1992, and 788.6 as against 1100.1 hours per annum in 1993 (Eurostat, 1995a; Eurostat, 1995b). Since the label 'part-time' does not have a cross-nationally common meaning, even with regard to actual hours of work, there is no straightforward approach to dealing with the occurrence of part-time employment.

Fortunately for the purposes of the present study, part-time working, on any definition, is not nearly so common in the manufacturing industries as in the private and public service industries of the advanced industrial world. Eurostat (1995c) presents figures on the proportion employed part-time in 'industry' – a category dominated by manufacturing – over the period 1980-1992. Even by the early 1990s, only 8% of German and only 9% of British industrial employees were considered part-time, with much smaller proportions considered so in the other EU countries. Moreover, one of the advantages of a variable oriented study such as the present thesis, spanning a large number of countries, is



that those differences which do exist between some nations in the full-part time composition of the workforce do not necessarily invalidate the general conclusions drawn. The complications of attempting to deal conceptually and empirically with the incidence of part time work in manufacturing are such as to outweigh the benefits of confronting the issues, at least as the full-part time composition of manufacturing employment currently stands.

The significance of the treatment of the hours of the self-employed in estimates of annual hours is limited, particularly in the manufacturing context. The OECD (1996b, Table C) features periodic snapshots of average annual hours across the whole economy over 1973-95 which show small differences between the average annual hours of the employed compared with those of employees, where both series are available. In the most recent figures available, in the most extreme cases countries feature a difference between the hours derived for employees and those derived for the employed of around only 100 hours. These extreme differences hold for Finland and France, with Germany showing less difference. Where hours are comparatively long, as in contemporary Japan or the US, the hours of employees are shown to be almost identical to those of all employed. The issue of the treatment of self-employment is of still less significance when considering manufacturing sectors, where self-employment remains much less common than in the economy more broadly (see e.g. OECD, 1994). In summary, even where available statistics on hours may differ in their coverage of the self-employed, whether in principle or in practice, the distortions introduced into estimates for manufacturing are likely to be slight.

The treatment of white collar employees in estimates of annual hours warrants comment. The bulk of estimates of annual hours available for the countries under study here relate in principle to all employees, whether manual or non-manual. The average estimate is made across the staff-works divide. The significance for the study of employment relations of the blue versus white collar distinction is far from clear. Lockwood (1958) analysed the



situation of non-manual employees as 'blackcoated workers'. Braverman (1974) argues that deskilling has applied in white collar work as well as in manual tasks. Hyman's (1975) conception of the working class encompasses non-manual employees. Crompton and Jones (1984) note a broad acceptance that the conceptual tools used to study manual work are of use in the study of non-manual activities, and talk of a 'white collar proletariat'. Smith et al (1991) note that the manual-non-manual distinction does not cohere with any distinction between productive and unproductive labour, suggesting that blue and subordinate white collar workers share a similar societal location. In the light of the contributions of a number of scholars who have sought to emphasise the commonalities of experience of blue and white collar employees, it does seem in many ways better in principle to deal with the working time of non-manual employees along with that of manual.

Indeed, in the cases of many countries, separate figures gauging the hours of blue and white collar employees do not seem available. Where such breakdowns are apparent they tend to be sporadic, and often relate only to specific branches of manufacturing. Moreover, the precise basis of these fragments is often unclear, and difficult to establish given the absence of alternative sources with which to compare. In any case, there are unknown problems of the cross-national comparability of the notions of blue and white collar as they are applied in such breakdowns, even amongst the advanced capitalist countries studied here.

Taking stock of records spanning a number of nations, however, there are some rough indications of the relative magnitudes of the blue and white collar constituencies who tend to feature in manufacturing, and whose recorded hours are averaged in the official statistics on which this study draws. OECD Labour Force Statistics (e.g. OECD, 1984; OECD, 1997b) feature, a little sporadically, some figures on the relative extent of 'production and maintenance' and 'administrative, technical and clerical' employees in



manufacturing for a number of countries. The absence of statistics for many countries, and the quite unexpected nature of the comparative variations in the extent of white collar employment for those countries where statistics are presented, underline the problems inherent in the use of any such manual-non-manual distinction in comparative work at the level of manufacturing industry. The very wording of the categories employed by the OECD suggest scope for differing national interpretations, with it seeming probable that at least some employees intimately involved in production are recorded as technical employees, grouped together with white collar occupations in the non-manual category. Nonetheless, if the statistics presented for all the countries on which figures are featured are taken together, the numbers are indicative. The figures suggest that around two-thirds, 65-75%, of wage and salary earners in manufacturing are manual workers, and that there has been no strong trend over time in this proportion. Their hours thus dominate estimates of average annual working time in manufacturing on which this study draws.

Average annual hours worked statistics may yet be subject to some distortion due to the differential recording of the hours of the blue and white collar employees. It may well be that white collar workers more commonly work overtime which is unpaid and that this tends not to be taken into account in the hours as recorded by official statistics. The payment made for, and official interest in, the overtime hours worked by manual workers means that these seem likely to be recorded much more accurately by the national responsible agencies. Thus, the statistics discussed here may have some shortcomings as indicators of the actual hours worked by the typical manufacturing employee. Of course, these possible shortcomings are limited by the sheer weight of manual workers in the sector.



## **Establishing comparable data on average annual hours worked.**

For present purposes, the aim is to assemble comparable and historically consistent data for annual hours for the eleven leading industrial nations over the period 1960-1995. Given the orientation of the present study to taking an overview of developments in manufacturing sectors as entities, and its comparative historical ambitions, the most notable statistics are those developed by the US Department of Labor's Bureau of Labor Statistics (BLS). This work was done in connection with BLS analysis of developments in manufacturing productivity, so that the figures generally relate to the hours of all those employed in manufacturing, whether self-employed or employees, manual or non-manual. The BLS stresses that its primary interest is in the trends in the various indicators which it estimates (personal correspondence, 15/9/99). BLS caution about the precision of their estimates of the raw average hours worked at any time in a particular country is reflected in their tendency to display not such absolute numbers, but rather indices showing the movement in hours for each country over time.

The BLS' Monthly Labour Review carries the most recent figures available, but historical series are also published. BLS (1989, Table 146) features historical indices of the total hours worked in manufacturing for twelve countries, including all but Finland and Austria amongst the countries which are considered here, for the period 1950-1988. BLS (1997a, 296) features the total hours figures for 1984-1995 along with a snapshot of the situation in 1970, confirming that the statistics refer to hours actually worked in all the countries covered (p.292). The BLS has produced, alongside these total hours indices, indices representing developments in the average annual hours actually worked per person employed in the manufacturing sectors of a selection of leading capitalist economies. This is



published less widely, but is available for the period 1960-95 in BLS (1996a), and indeed on the BLS web-site (20/8/98).

The BLS seeks to derive comparable data by precisely defining the concept it seeks to measure, exploring the correspondence of the available foreign statistical series with the concept on which the Bureau settles and by adjusting the series, where this is possible (BLS, 1997a; BLS web-site 20/8/98). The hours estimates refer to hours actually worked in all the countries treated, thus attempting to take account of all the components of annual hours as discussed above. The series for Norway, Sweden and France (from 1970) are the official series published with the national accounts. For Canada and the US, the figures used are the annual hours estimates prepared by the national statistical agencies for the respective governments. For Germany, the BLS uses the estimates of average hours prepared by the Institut für Arbeitsmarkt- und Berufsforschung for the ministry of labour. In the cases of other countries, average hours are estimated by the BLS from the available sources. The hours indices generally relate to manufacturing as it is defined under ISIC, although the measures for France, as well as for Italy from 1959, relate to the non-energy related products of both mining and manufacturing. Until 1987, the figures for Italy are those prepared for ISTAT, whilst from 1987 onwards, the figures are extrapolated from a survey of average hours in large manufacturing enterprises (personal correspondence, 15/8/98). Except in the cases of Italy and the UK, for which the statistics relate to employees alone, the figures represent average hours across all employed persons, including the self-employed.<sup>liii</sup> The BLS figures on average hours for Japan are derived from the Japanese labour surveys, and relate to the experience of dependents working in companies with more than 5 employees together with that of the self-employed in manufacturing (personal correspondence with BLS, 15/9/98).



Despite the BLS caution about cross-national comparative indicators of the extent of working time, various other organisations have produced benchmarks which gauge the cross-national comparative extent of hours actually worked in manufacturing in the late 1980s and early 1990s. The Institut Wirtschaft (IW) has prepared estimates of the actual annual hours of work in manufacturing in 1994 which have been cited by both the German employers' federation, the BDA, and the ILO (see e.g. ILO, 1995, 38). The figures, which are presented in Table 6 below, cover all the nations presently under examination except Austria and Finland. ILO (1995, 38) also features the IW benchmark for 1980. Generally, the proportionate change in annual hours implied by IW over 1980-94 corresponds extremely closely with that implied by the BLS indices.<sup>liv</sup>

| Country        | IW actual annual hours, manufacturing, 1994. |
|----------------|--|
|                |  |
| United States  | 1994   |
| Japan          | 1964   |
| Canada         | 1898   |
| United Kingdom | 1826   |
| Italy          | 1803   |
| Norway         | 1667   |
| Sweden         | 1620   |
| France         | 1607   |
| Germany        | 1527   |
|                |  |

Table 6. IW benchmarks of average actual annual hours in manufacturing.



The Swedish employers' confederation, SAF, has also prepared estimates of average annual hours actually worked in manufacturing for a number of countries (ILO, 1995, 229). These constitute the principal alternative source of cross-national comparative benchmarks for hours actually worked in manufacturing. The figures span seven of the eleven nations under scrutiny here, including Finland, neglected in the IW work. The SAF estimates, which refer specifically to employees in manufacturing, and relate to 1991, are shown in Table 7 below.

| Country | SAF average annual actual hours of employees in manufacturing. |
|---------|--|
|         |  |
| UK      | 1844   |
| Norway  | 1672   |
| Germany | 1545   |
| Finland | 1604   |
| France  | 1617   |
| Italy   | 1679   |
| Sweden  | 1465   |
|         |  |

Table 7. SAF benchmarks of average actual annual hours in manufacturing.

Comparison of these IW and SAF comparative benchmarks with the implications of the statistics presented for smaller groups of nations in the various alternative sources



discussed above allows some assessment of the adequacy of the benchmarks prepared by IW and SAF. This assessment required the projection of the IW and SAF figures using the BLS indices of the implications of a benchmark to the years to which the alternative sources cited earlier in this chapter. This procedure ensures that the benchmark selected here for each of the countries reflected the impression about comparative working time in the 1990s conveyed by the various alternative sources. The benchmarks taken for the purposes of the present study on the basis of this assessment constitute the most determined available efforts to evaluate average annual working time in manufacturing. The cases of the US, Japan, Canada, the UK, Norway, Sweden, France & West(ern) Germany are all relatively straightforward. In each of these cases, the IW benchmarks for annual hours worked in manufacturing industry seem adequate, whilst the BLS (1996a) provides indices of average annual hours in manufacturing, estimated continuously over 1960-95. Series for average annual hours were thus derived for the present study by (mostly backwards) extrapolation from the IW benchmarks.

However, although the IW published an annual estimate of hours for Italy this is not used here as it was considerably out of line with all other benchmark estimates of hours in the country. The estimate presented by SAF for manufacturing employees is much better consistent with the comparative working time implied for Italy in the various Eurostat sources, for example (e.g. Eurostat, 1995b). The series for annual hours in Italian manufacturing utilised here was thus derived by using the 1991 SAF benchmark together with the BLS index of average annual hours in manufacturing.

Since the BLS offers no series showing the historical movement of hours in Finland and in Austria, other sources are required for present purposes. The series employed here for Finland was derived from Statistics Finland's (1984; 1994; 1998) National Accounts and relates only to employees in manufacturing. It is clear that the inclusion of the very small



number of self-employed in the calculation would make negligible difference to the average hours series derived. Reassuringly, the average annual hours in Finland's manufacturing sector suggested by the Finnish national accounts for 1991 accords well with the SAF benchmark estimate cited by the ILO (1995, 229).

The series for Austria was derived principally from the series for the monthly hours of work by wage earners in industry published in OECD (1993a, 109). The more recent monthly working time figures were taken from the OECD (1997a) Statistical Compendium database, which is consistent with the printed source. The statistics exclude hours paid for but not worked (OECD, 1993a, 109), thus relating essentially to actual working time as it is conceived in the present study. It is clear that the figures relate to a sector ranging more broadly than manufacturing, though the electricity industry is excluded, together with, strangely, sawmilling (OECD, 1993a, 109). Nevertheless, the conventional notion of industry, as those activities covered by ISIC2-4, is in any case dominated by manufacturing, which typically constitutes 95% of such industrial employment (see OECD, 1997b). However, the use of the term 'wage earners' suggests that coverage may be confined to manual workers, although it must be said that such terms are sometimes used rather casually in the annotation of labour statistics. In sum, the figures derived here for Austria should be regarded with a little caution since there was no alternative source which could be used for corroboration of the comparative situation implied by the OECD statistics employed.

Thus, for the purposes of the present study, series for average annual hours actually worked in manufacturing were assembled for the eleven countries and over the period 1960-1995. The comparative historical pattern of average annual hours established is shown in the charts below. Given the attention devoted to annual hours by the various bodies whose work is drawn on here, and the critical attitude adopted in the assessment of the various sources available, there can be few doubts about the cross-national comparability and historical



consistency of the series constructed. The figures are in any case broadly consistent with the figures on annual hours across all industries presented, for example, in OECD (1996b) and by Tanninen (1998).

Charts 7-10 below show much variation in the patterns of comparative historical development of average annual actual hours. In the period from 1960 to 1974, annual hours showed some tendency to shorten in each of the eleven countries featured, though there was clearly more commonality of experience amongst the European countries. Hours in Japan remained markedly higher than those in any other nation throughout this sub-period, despite their rapid fall, particularly in the early 1970s. Meanwhile, the reduction in hours experienced in the US and Canada was stuttering and ultimately slight.

From 1975 on, the pattern of experience shows marked cross-national differences. In the wake of the oil shock, working time therefore moved variously amongst the countries considered here. In the Anglo-Saxon countries, the gradual shortenings of hours of the era before the oil shock flattened out and then began to rise. The dramatic falls in hours of the 1960s and particularly early 1970s in Japan gave way to a jump to a very gently rising plateau which endured from the second half of the 1970s to the second half of the 1980s. In continental Europe, hours continued to decline in general, though there was some flattening out from the end of the 1970s. Swedish hours departed further and further from those in other continental European nations from the mid-1970s, and by 1980 had reached an outstandingly short low point from which there was then a gradual lengthening. In Italy, hours which had been second in brevity only to those in Sweden until the early 1980s showed a dramatic lengthening from the mid to late 1980s.

From the early 1990s, hours in Canada and the US lengthened quickly, whilst remaining flatter or continuing to decline in most other nations. The striking shortening of working hours in Japan from the second half of the 1980s brought annual working time there



beneath that in the US by the early-mid 1990s. Perhaps the most startling developments apparent in the 1990s are those in Sweden, however.

The extension of working hours apparent in Sweden from the early 1990s is dramatic, perhaps so dramatic as to cast doubt on the annual hours data derived. There is however corroboration of the movement in OECD sources. OECD statistics for the period 1991q1 to 1994q1 suggest that the extension was particularly severe in manufacturing, with average hours worked per employee in the sector increasing by 8% in this period compared with a 3% increase across the society as a whole (OECD, 1997e, 32). The severe recession, expressed in movements in GDP and unemployment, of 1991-3 in particular saw a substantial lengthening of hours. The ILO (1995, 230) notes employers' efforts to extend working time by freezing or reducing various forms of leave from the close of the 1980s, and stresses the significance of the government's introduction of waiting days for social sickness insurance in the early 1990s. Sick leave declined from 8.9% of hours worked in 1991 to only 6.3% in 1995 (OECD, 1997e, 32; 179n3). Moreover, overtime exploded in this period, rising to more than 3 hours a week on average in industry, compared with the hour a week which was formerly typical (IRS, 1994, 11). Yet whilst annual hours in Swedish manufacturing clearly lengthened sharply in the 1990s, even by 1995 they remained amongst the lowest sectoral hours of the countries under study here.



Chart 7. Average annual hours worked.

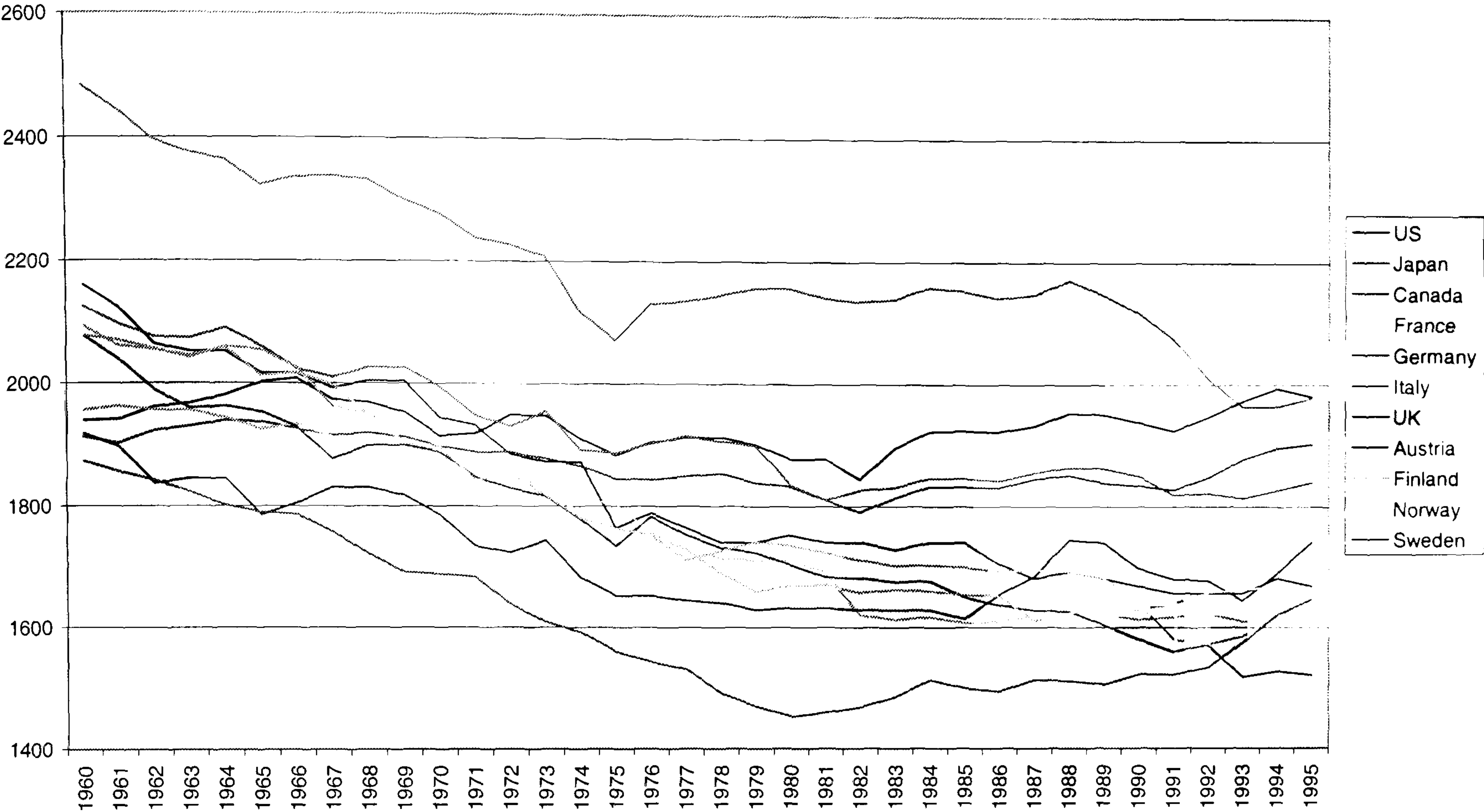


Chart 8. Average annual hours, European core.

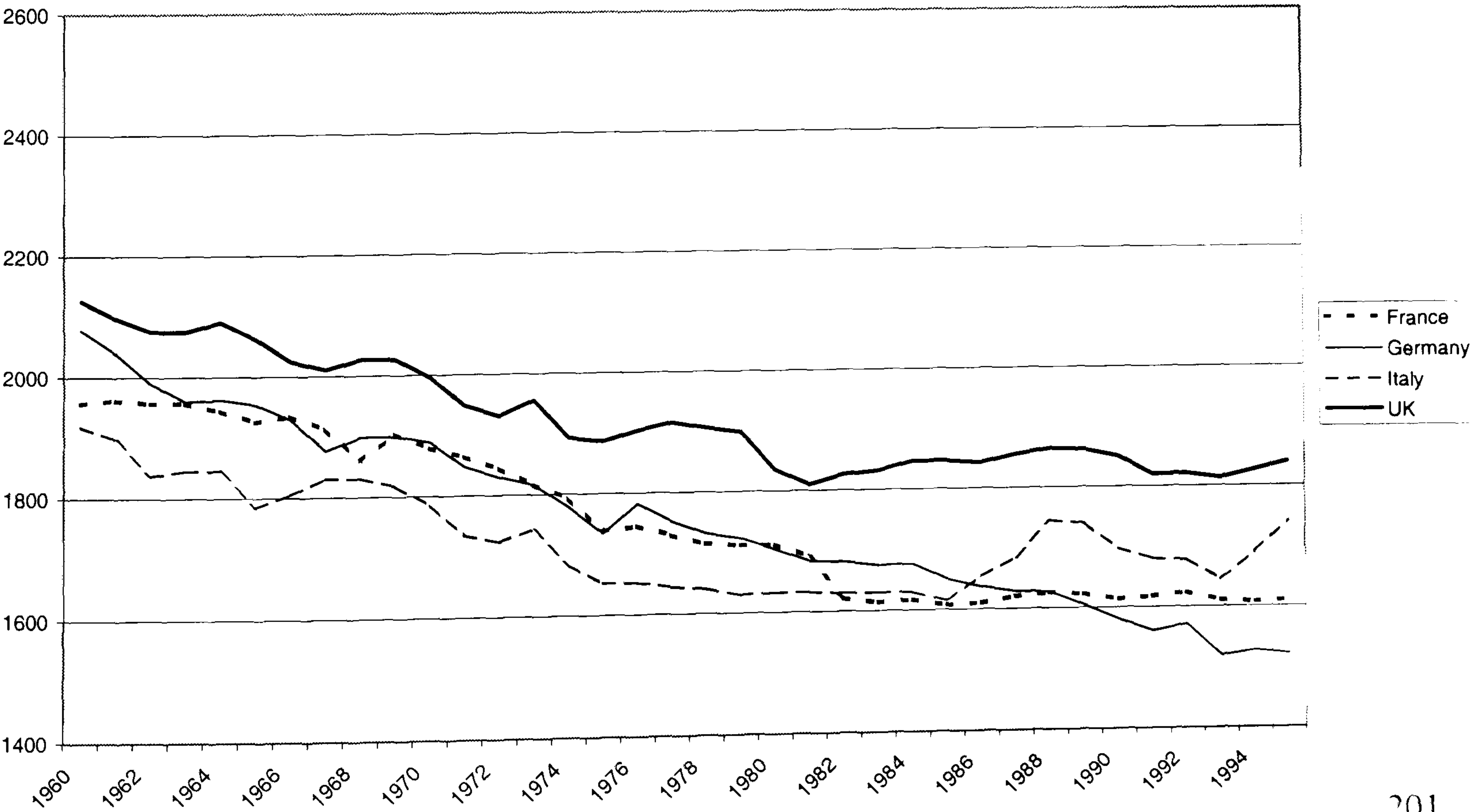




Chart 9. Average annual hours, Austria and Nordic nations

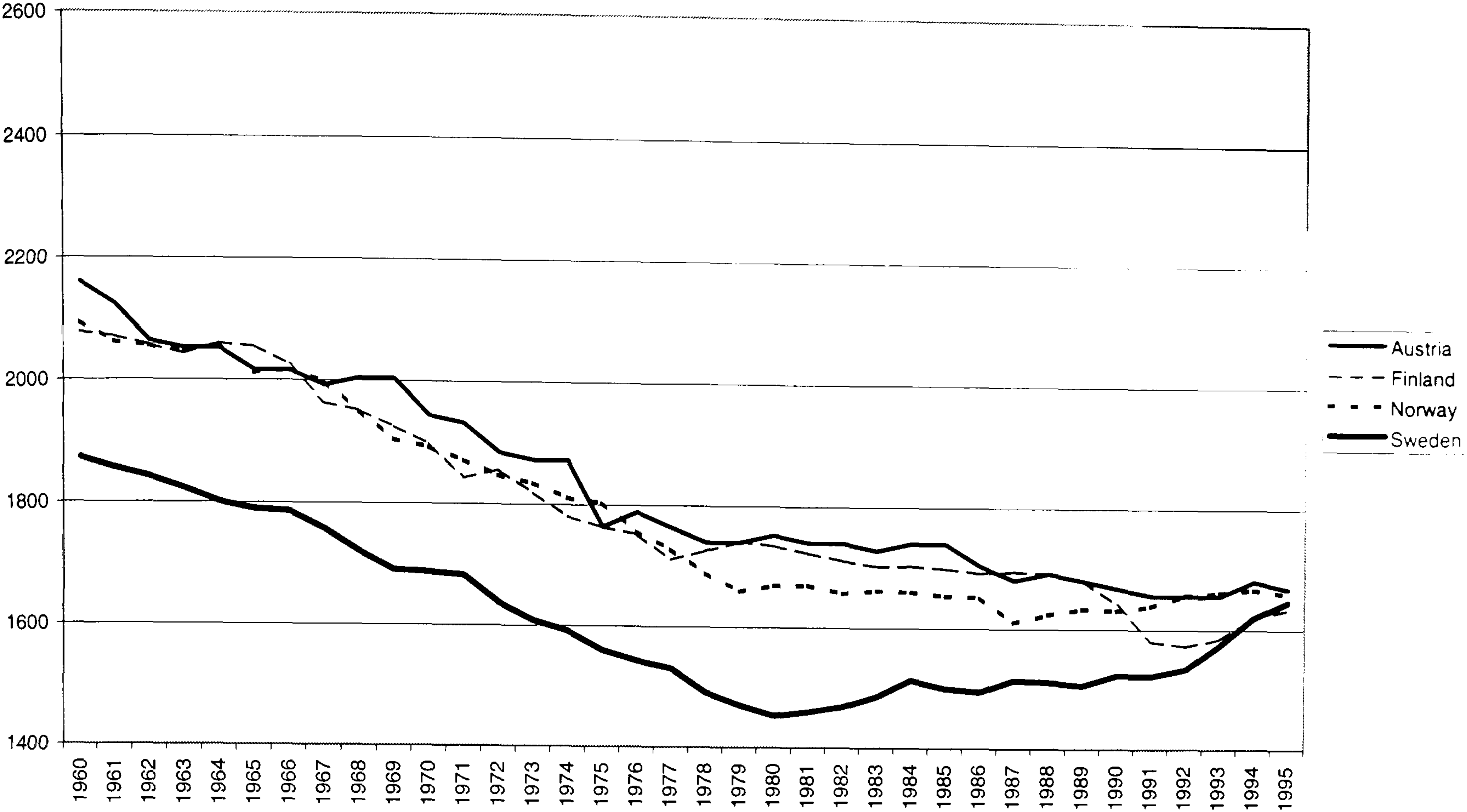
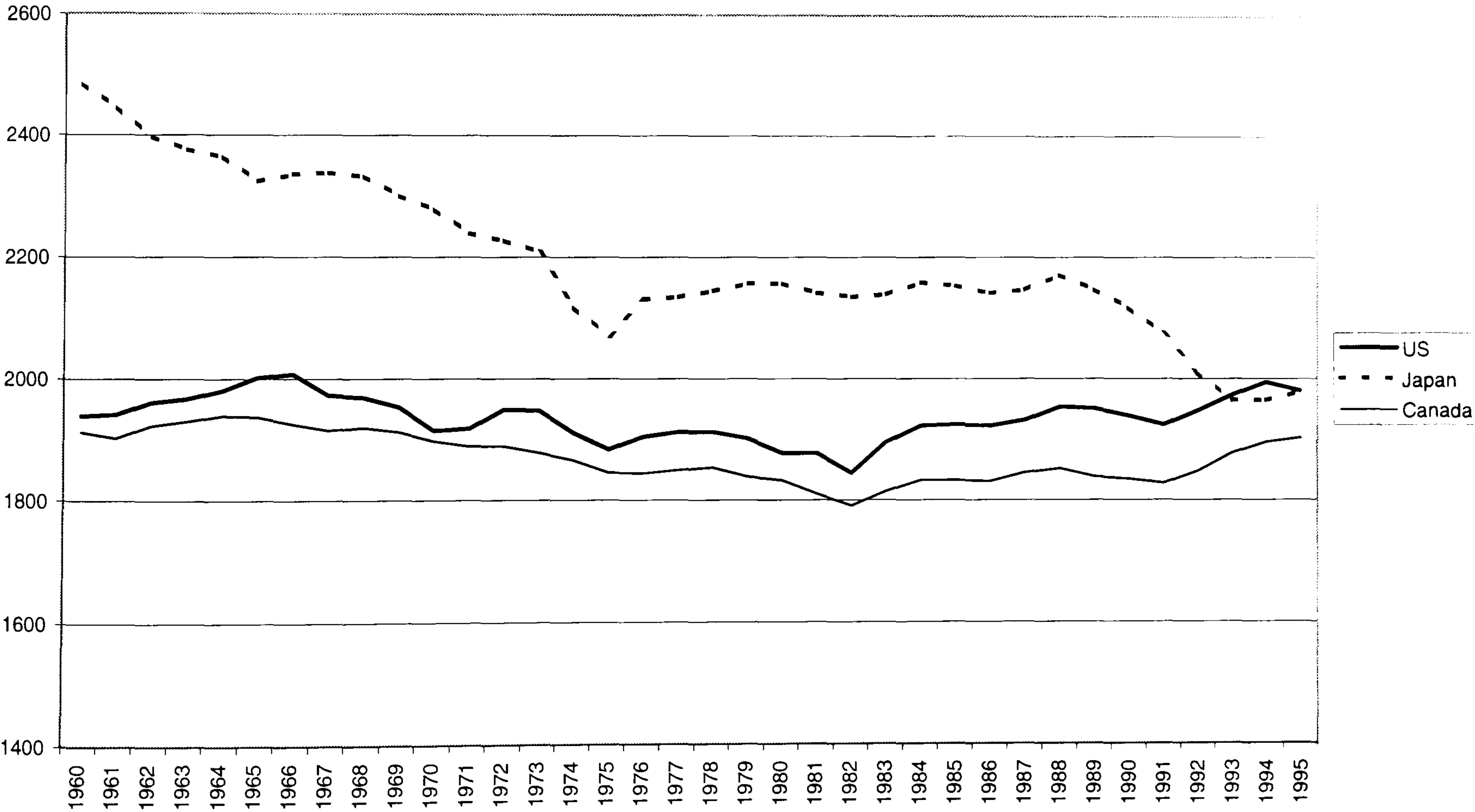


Chart 10. Average annual hours, non-Europe.





## **The distinctive blue collar experience.**

The relation of the series derived and presented here to the snapshots presented in the gamut of alternative sources discussed above, including some concerning solely manual workers and some solely non-manual, suggest that the series constitute fair reflections of the comparative working hours of both blue and white collar workers in the 1980s and 1990s. It does not seem, however, that such a statement can be made for the earlier years spanned by the study.

Unfortunately, the historical series derived for the average hours of the typical manufacturing employee figures appear to mask the differing trajectories of white collar and blue collar hours in earlier years. There is some evidence, amongst the fragmentary data available for this early period, that the annual hours of work of manual workers in the manufacturing sectors of some of the countries under study differed substantially from the work times suggested by the process of backward extrapolation of 1990s benchmarks employed in the derivation of the data depicted here. Eurostat (1984) reports statistics on the annual hours of manual workers in several EC countries' manufacturing sectors in 1966. It records the annual working time of manual workers as 1858 in West Germany, 2064 in France, and 1902 in Italy. There seem no such statistics for manufacturing as a whole which reach back further. However, a series published in Eurostat (1989) on the hours of work of manual workers in the iron and steel industry, which records annual hours in 1966 accordingly closely with those from Eurostat (1984) for the whole of manufacturing cited above, features some statistics for the earliest years of the present study. It reports blue collar workers' annual hours in iron and steel in 1960 as 2000 for Germany, 2305 for France, and 2183 in Italy. These two early sets of benchmarks for the average annual hours of manual workers in manufacturing are substantially different from the hours estimates



derived for the typical manufacturing employee by the backward extrapolation using BLS data, and presented in the figure above. With the peculiar exception of West Germany, for which manual hours are slightly overestimated, it seems that the backward extrapolations underestimate the hours of manual workers in these early years of the period 1960-95.

Most strikingly, it seems that the extent of the fall in the hours of work of French production workers to the comparatively low benchmark level of the early 1990s is underestimated by the extrapolation procedure used here. The available figures suggest that the annual working time of production workers in French manufacturing in the early-mid 1960s was around 200-300 hours longer than the extrapolation procedure reckons - some 10% longer. It seems that in the case of France the evolution of the average hours of work recorded for white collar workers differed markedly from that of the average hours recorded for blue collar workers, with white collar hours declining little if at all whilst blue collar hours declined substantially over the period 1960-95. It seems that it is thus that the backward projection of a benchmark for the 1990s, which seems to reflect closely the manual experience at that time, with the use of the BLS index for the hours of all employees in manufacturing, an index reflecting in large part the stability of white collar hours over the period, yields a substantial underestimate of the extent of average blue collar hours in the early 1960s.

Turning to the case of Italy, for which the Eurostat (1984; 1989) figures suggest manual hours some 100-200 hours longer than the extrapolation procedure adopted here suggests, there are further statistics for these early years. The Istituto Centrale di Statistica (ISTAT, 1970, p.65) features statistics based on a huge survey, of 2m workers employed in establishments with 10 or more workers by tens of thousands of firms, relating to the average monthly hours (over the twelve months of the year) actually worked by the average manual worker in manufacturing. This records 2000-2050 hours at the very start of the



1960s, suggesting that the underestimate under the extrapolation procedure is towards 100 rather than 200 hours, but nonetheless corroborating some understatement.

The exclusion of plants employing fewer than ten workers from the survey implies, in the context of the particular predominance of small scale manufacture in contemporary Italy, the neglect of the experience of close to 28% of manufacturing workers (Franzosi, 1995, 84). It seems likely, in the light of the Franzosi's (1995, 179; 323) comments on the relative working conditions, and indeed specifically relative working time, in small plants versus those in large, that the workers excluded from consideration were working at least as long, and most likely on average longer hours, as the workers the survey covered. This suggests that for Italy's manufacturing manual workers as a whole the Eurostat (1984; 1989) data does not overstate annual hours, and thus provides a reasonable guide to the magnitude of their understatement in the backward extrapolation using the BLS index. As in the case of France, it seems likely that this discrepancy arises from the consideration of the more gently falling recorded white collar hours in the BLS derivation of the average annual hours index on which the estimates derived here depend.

There is related evidence that the extent of the decline in the average annual hours of manual workers employed in the largest plants of Italian manufacturing in the 1970s and early 1980s may be substantially understated by the series derived here for the typical employee in the typical plant. ISTAT (1986, Tavola 6.3) carries annual indices for the actual monthly hours of manual industrial workers in 1000 establishments employing at least 500 workers over the period 1972-84. These survey statistics on monthly hours are averaged both over the twelve months of the year and over the workers (ISTAT, 1986, 17) to yield a series which suggests that the extent of the decline in the hours of manual workers in such establishments over this extended period is, proportionately, twice that which the BLS index yields for the typical employee (12% vs. 5.5%). Exceptionally in comparative perspective,



however, such very large establishments employed only 21% of manufacturing employees in 1971, with this proportion falling substantially by 1981 (Franzosi, 1995, 85: Tab 3.14). Given the apparent divergence of working hours across establishments of different sizes through the 1970s documented by Franzosi (1995, 179; 333), who refers explicitly to the continued resort to Saturday and even Sunday working in small firms in the 1970s, it seems very likely that the movement in the BLS index is a better indication of the evolution of annual hours for the average manual worker in manufacturing than is the ISTAT data derived from surveys of the very largest plants.

Some statistics are also available for Sweden suggesting that, again, the extrapolation procedure employed here understates the hours of work of manual manufacturing workers in 1960, and, correspondingly, the extent of their shortening to what seems a reliable early 1990s benchmark. Evans (1975) features figures on the average monthly hours actually worked in manufacturing (p.141) which the accompanying commentary suggests relates only to wage earners (pp.114-5). This data suggests annualised hours of 2004 in 1960, falling to 1932 hours by 1965 and 1812 hours by 1970. Whilst these implied annual hours should be regarded with a little caution, as it is not clear whether the statistics on monthly hours presented by Evans (1975) relate only to one reference month or to some sort of average, they suggest, throughout the period, annual hours for blue collar workers around 130 longer than the estimates for all employees derived by the backward extrapolation which is employed here.

In summary, the backwards extrapolation of hours from the benchmarks of the 1990s employed in the present thesis masks substantial difference in the historical experience of blue and white collars. It seems that the extent of the fall in the working hours of manual workers in manufacturing, to the levels of the well corroborated benchmarks of the 1990s, is likely to be understated for most countries by the series derived here. The hours of manual



workers in the industrial world were longer in the early 1960s than the backward extrapolations suggest. Nevertheless, there seems very good evidence that the series derived do reflect the experience of the average employee in each nation's manufacturing industry. The series derived here represent consistent and cross-nationally comparable indications of average actual annual hours in the sector.

### **The logic of industrialism, globalisation and convergence.**

The comparative historical data assembled on hours here allow a further statistical assessment of the evidence of societal convergence in work humanization. Just as with the series for fatal injury incidence, two statistical measures of spread are used here to characterise historical developments in the cross-national variation in experiences. Standard deviations (SD) and coefficients of variation (CoV) in annual hours are charted (Charts 11 & 12) for each year of the 36 year period spanned by the data field. There is perhaps less reason here than in the treatment of fatal injuries to rely on the coefficient of variation, as hours are much less strongly trended. Again, the robustness of this means of assessment of convergence to any enduring national idiosyncrasies is worth noting. Again, for completeness, the measures of spread are depicted both on the basis that the eleven nations constitute a sample, and on the basis that they represent a distinct population of leading industrial nations.



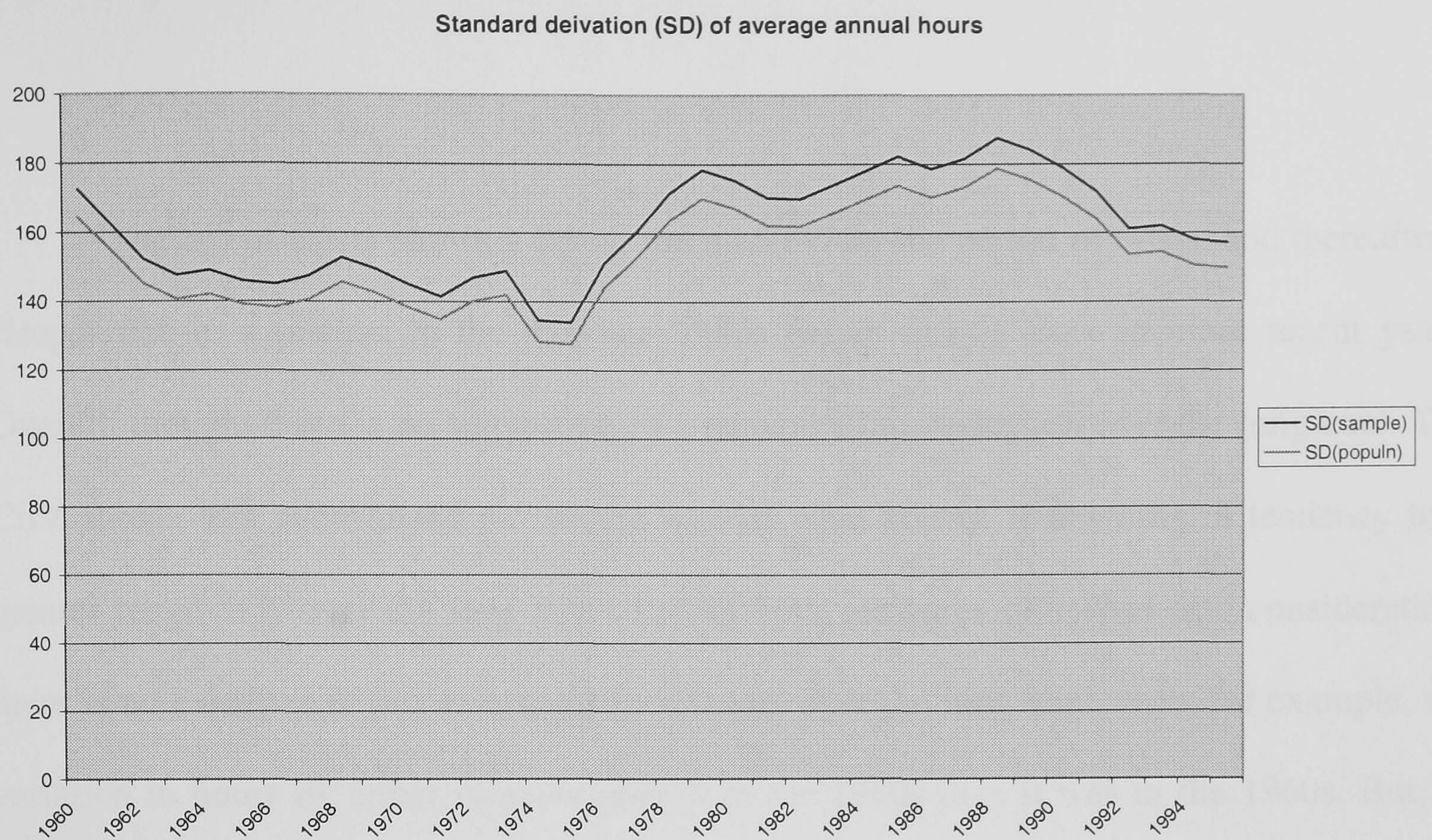
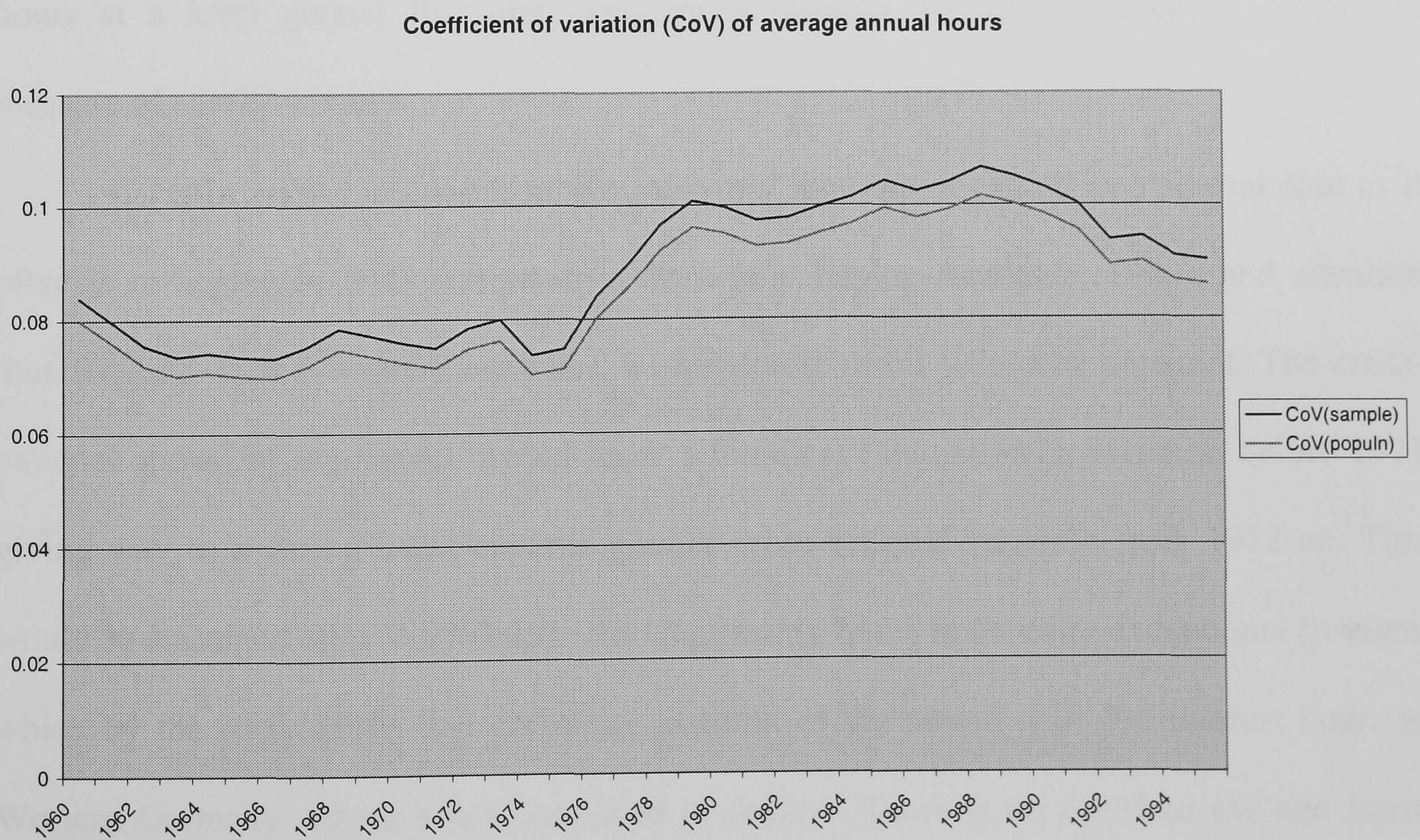


Chart 11. Standard deviation of average annual hours worked.

Chart 12. Coefficient of variation of average annual hours worked.





The SD of hours shows a fall to the mid-1970s, the period of crisis, and thereafter a steeper rise to a plateau in the mid-late 1980s before falling back in more recent years. Overall, though, there is no suggestion of a tendency to a reduction over the long haul. The CoV shows less accentuated movement around what seems, if anything, a tendency to a greater magnitude over the long haul. Taking both measures of spread into consideration, there is no evidence of any convergence of hours over the long haul, with, for example, the variation in hours by either measure greater in the 1980s than it was in the 1960s. But, in contrast to the experience with respect to fatal injuries, there is some indication of a convergence over the course of the most recent years spanned by the study. This evidence of convergence in hours from the late-1980s to the mid-1990s is consistent with recent stresses on intensifying pressures of globalisation. This recent convergence still left the variation in hours at a level greater than that experienced through the 1960s, however, whichever measure of spread is taken.

If Japan were excluded from the statistical analysis, regarded as a special case as it often is in aggregate level comparative work (e.g. Esping-Andersen, 1999), and attention thus focused on the Western societies, a remarkable result would be apparent. The cross-national spread of experience would show a trendless fluctuation in variation before 1971 giving way to a strong trend towards *greater* cross-national variation from 1972 on. This would be sustained until 1995 despite the lengthening hours in the once exceptional Sweden, which by the early 1990s had ceded the position of the nation with the shortest hours to Western Germany, where hours continued to decline. There is no desire to exclude Japan from the analysis as an 'outlier' here. Yet this thought experiment serves to underline the limits of the recent convergence in hours apparent. The global forces highlighted Womack et



al (1990), and more recently by Crouch & Streeck (1997a) and Kochan et al (1997). seem to be of limited purchase with respect to annual hours.

## **Conclusion.**

Dependable data on average annual actual hours over 1960-1995 in the manufacturing sectors of the eleven nations under scrutiny here may relatively readily be assembled from the available international sources, although a critical assessment of the statistics available is vital. The data assembled show some remarkable comparative variations in the hours of those in the core of the internationally exposed sector. There does remain some doubt about the commonality of experience of blue and white collar workers in a number of nations, such that it seems likely that rather different occupational experiences in the early years spanned by the present study are glossed over by the series for hours derived here. Nevertheless, there is little evidence here of any historic compression of societal diversity in working hours for the average manufacturing employee.



## **6. The extent of the managerial hierarchy in manufacturing**

This chapter explores the official statistics available bearing on the extent of the managerial hierarchy in advanced industrial nations' manufacturing sectors. It extends the seminal work of David M. Gordon (e.g. 1996) in this area. The research programme pretends to indicate something of the nature of work organisation, an important dimension of work humanisation. Ultimately, though, the comparative historical gauges of managerial hierarchy obtained here demonstrate only the inadequacy of such indicators.

### **The significance of the extent of the managerial hierarchy.**

The 1990s have seen much business and popular discussion of the extent of managerial hierarchies, particularly in the largest corporations. Corporate initiatives intended to strip out layers of the managerial and administrative bureaucracy, often motivated by an appreciation of the structure of Japanese companies, have been the subject of much media attention. Terms such as 'de-layering' and references to the flattening of hierarchies have become commonplace across the advanced industrialised countries, although they are perhaps more prominent in the Anglo-Saxon world. This piece seeks to employ official statistics on the occupational structures of a number of advanced industrial societies to comment on the comparative historical development of managerial hierarchies. In as far as is possible, attention focuses on developments in the manufacturing sector.

Discussion of historical and cross-national variation in occupational structures is quite common in the literatures of employment and industrial relations, often with the discussion centred specifically on the extent of managerial employment. Braverman (1974,



239-241) interprets the growth in the proportion of managerial and administrative employees in manufacturing activities apparent in the US as evidence of a creeping separation of conception and execution in US corporations. In the so-called 'societal effects' literature, there is much attention to the 'span of control' of managers and supervisors, with the presumption that the intensity of managerial presence expresses much of the nature of work organisation (Maurice et al, 1986; Lane, 1989). In comparative work within Europe, several National Institute for Economic and Social Research studies suggest that in manufacturing management are drawn in to tackle day to day shopfloor problems where these are not dealt with by the employees immediately involved, so that the extent of managerial employment may be a reflection of the polarisation of skill formation or utilisation (e.g. Mason et al, 1994; Prais, 1995; Mason, 1997). Many European scholars stress explicitly the significance of the depth of the managerial hierarchy for the direct participation of employees on the manufacturing shopfloor, regarding this aspect of the occupational structure of a company as a key expression of the autonomy and variety of work enjoyed by shopfloor employees in manufacturing (e.g. Berggren, 1994; Streeck, 1996; Roth, 1997). The depth of the managerial hierarchy may thus also indicate something of the style of management, whether authoritarian or consultative, which is itself stressed by writers on international human resource management (e.g. Holden et al, 1993).

Although the bulk of the research that touches on the extent of management is case oriented, this is not the only approach which might be taken. Periodic labour force surveys and censuses provide breakdowns of the occupational structures of the advanced capitalist countries, offering some prospect of an aggregate cross-national comparative characterisation of the extent of managerial hierarchies. Even where, as is often the case, the official statistics are based on sample surveys, the numbers questioned tend to be large, constituting 10-20% of the total workforce.



Although Braverman (1974, 239-241) refers briefly to census statistics in his seminal contribution, the avenue was not pursued for a number of years. More than a decade ago, however, David M. Gordon began to explore in detail the historical movements in the relative extent of managerial hierarchies in the US using such official statistics (Gordon, 1990). His subsequent comparative work on managerial hierarchies represents the most ambitious and best developed aggregate level quantitative attempt to compare this aspect of corporate organisation across national borders (Gordon, 1994a; 1994b; 1996). This work was a development of the self-styled 'radical political economy' approach to employment relations, which stresses employers' motivation of employees by the prospect of job loss, and hence emphasises the monitoring role of management (e.g. Bowles, 1985). The role of management in planning, coordination, administration and engineering, and indeed its ideological role in managing meaning (e.g. Legge, 1995), is played down in the tradition.

Whilst acknowledging that the category of administrative and managerial occupations will include many managers who have little immediate role in supervision, or even in the organisation of production, Gordon (1994a, 1996) suggests that their principal significance is as elements of a multiple layered hierarchy of supervision. Managers and administrators constitute a 'pyramid of surveillance' which culminates in the supervision of direct labour in the workplace. Thus, for Gordon and other writers in his school, supervision may be indirect, but it remains the critical function of management.

Despite the emphasis of the US radical political economists, it is quite possible to recognise the diverse roles of management whilst still regarding the extent of the managerial hierarchy apparent in official statistics as a possible indicator of the direct employee participation allowed by the shape of prevailing work organisation. As the work of industrial relations scholars discussed above suggests, the extent of management expresses something of the separation of conception of production from the execution of manual labour in the



workplace. It provides an indication of the lengths to which the functions of administration, planning, problem solving and innovation are removed from the shopfloor. In principle then, census and labour force statistics regarding the occupational structure promise some insight into the extent of the direct participation of the typical non-managerial employee of a nation. Such an indication of the nature of work organisation in the typical employment relationship is more than is promised by any other generally available official series. Work on occupational structure thus has great potential.

### **Gauging the aggregate extent of the managerial hierarchy**

Gordon's (1996) final work features his most elaborate cross-national comparative analysis of the official statistics available on the extent of the managerial hierarchy. This work, in common with his earlier comparative contributions (1994a, b), draws exclusively on official statistics on occupational structure collated by the International Labour Office (ILO) in the annual ILO Yearbook of Labour Statistics. Gordon's (1996) book presents only his calculations of the proportion of administrative and managerial staff in the workforce, the 'bureaucratic burden' as Gordon describes it. This is in contrast to his earlier work in the area, which discusses alongside the 'bureaucratic burden' what he (1994a, b) terms the 'intensity of supervision', a ratio which amounts to the inverse of an aggregate measure of the span of control of managerial employees. Whilst played down in his final contribution, the notion of the 'intensity of supervision' stresses the monitoring activities which Gordon argued are central to management.

Gordon's (1994a, b; 1996) variable oriented work deals with the experience in as many as 18 OECD nations. In all his published cross-national work in this area, however, he confines his attention to snapshots of the comparative extent of the managerial hierarchy



around 1980, not venturing any attempt to use the official figures for comparative historical analysis. This thesis seeks to explore this historical dimension, and in so doing illuminate the contribution of research on managerial hierarchies which employs official statistics. The present contribution draws primarily on the historical occupational decompositions carried in the ILO Yearbooks and the ILO (1990) Retrospective. In as far as is possible, attention is focused on developments in manufacturing, in contrast to Gordon's work, which treats the non-farm economy as a whole. For the years from 1960 to the early 1970s, no sectoral breakdowns of occupational structures are generally available from the classifications carried in the ILO Yearbooks. For these years, therefore, the analysis must centre on the comparative situation in the non-agricultural economy in its entirety. The more recent statistics, from the mid-1970s, allow, in general, the isolation of the experience in nations' manufacturing sectors specifically, although for some countries the sporadic data available allows the breaking out of sectoral occupational structures for few if any years.

The statistics on occupational structure carried in the ILO Yearbooks are, with few acknowledged exceptions, presented in the categories defined by international standard occupational classifications (ISCOs). ISCO-58 is applied over the ILO figures for 1960-73, whilst ISCO-68 is applied over the ILO figures from 1974 onwards. Although ISCO-88 was published in 1990, it is not applied in the decompositions featuring in the ILO Yearbooks, even in the most recent. The 'major groups' of the ISCOs into which countries' responsible bodies are requested to map the national data collected from population censuses and labour force surveys for submission to the ILO over the period 1960-73 (see ILO, 1990, XIV) are as follows:



## **ISCO-58.**

- 0. Professional, technical and related workers.
- 1. Administrative, executive and managerial workers.
- 2. Clerical workers.
- 3. Sales workers.
- 4. Farmers, fishermen, hunters, loggers and related workers.
- 5. Miners, quarrymen and related workers.
- 6. Workers in transport and communication occupations.
- 7-8. Craftsmen, production-process workers,  
and labourers not elsewhere classified.
- 9. Service, sport and recreation workers.
- X. Workers not classifiable by occupation.
- AF. Members of the armed forces.



## ISCO-68.

- 0/1. Professional, technical and related workers.
- 2. Managerial and administrative workers.
- 3. Clerical and related workers.
- 4. Sales workers.
- 5. Service workers.
- 6. Agriculture, animal husbandry and forestry workers,  
fishermen and hunters.
- 7/8/9. Production and related workers,  
transport equipment operators and labourers.
- X. Workers not classifiable by occupation.
- AF. Members of the armed forces.

The differences between the classifications are, at least for present purposes, of minor significance. With regard to white collar work, the first four categories of ISCO-58 remained essentially the same in ISCO-68, though their numbering changed, and their labelling was amended slightly. With regard to agriculture, the old category 4 became the new category 6. In services, the category 9 of ISCO-58 became the category 5 of ISCO-68. With regard to industry, the old categories 5, 6, 7-8 were collapsed together to become new category 7/8/9. Across all economic activities, the classification of first line supervisors according to the occupational category of the direct labour they supervise, rather than as management, is explicitly required under ISCO-68 whilst seeming implicit under ISCO-58. Finally, regardless of the ISCO in question, the treatment of the unemployed in the figures



presented varies between countries. Some countries classified the jobless according to their last job if they had one, and registering them in the residual group as non-classifiable if they did not, whilst others tended to exclude the unemployed from the classification altogether (ILO ,1990, XIV). The implications of this are unclear.

The ‘bureaucratic burden’ in corporations, the focus of Gordon’s (1996) best developed analysis, is defined by him as the proportion of administrative and managerial employees in total non-farm employment, and is usually expressed as a percentage. Derived similarly from ISCO-58 and ISCO-68, under ISCO-68 the bureaucratic burden is approximated as:

$$\text{Bureaucratic burden} = \text{administrative \& managerial} / \text{non-farm employment}$$

where total non-farm employment is the sum of the numbers of administrative and managerial, professional and technical, clerical, sales, service, production workers (i.e. craftsmen, production and related workers, transport, mine and quarry workers, and those labourers not elsewhere classified) and those left completely non-classified.

The ‘intensity of supervision’ stressed more in Gordon’s (1990; 1994a; b) earlier work, is expressed as a ratio - that of the number of administrative and supervisory workers to the number of direct workers.

$$\text{Intensity of supervision} = \text{administrative \& managerial} / \text{direct non-farm employment}$$

where the number of direct workers is the sum of clerical, service, production (as above) and non-classified employees. The intensity of supervision thus excludes from the denominator (in addition to the agricultural occupations excluded in all the analysis) professional,



technical and related workers and sales workers as well as administrative and managerial workers. The inclusion of workers not classified at all by occupation in the denominator of both gauges overcomes the problem of the differing national categorisations of workers unemployed at the time of the survey (see above), except to the extent that these workers are excluded from the classification process altogether in some countries but not in others.

If the bureaucratic burden is expressed as a fraction rather than as a percentage, the construction above implies that the ratio expressing the intensity of supervision always exceeds it. However, as comparison of the figures featured in Gordon (1994a, b) demonstrates for the non-agricultural economy around 1980, the ranking of nations according to the bureaucratic burden tends to be almost identical to that based on the intensity of supervision. Thus, the empirical focus here, as in Gordon's (1996) later work, is solely on the bureaucratic burden. Since sectoral decompositions of occupational structure are unavailable for the period from 1960 to the mid-1970s, so that estimates of the extent of the managerial hierarchy in manufacturing specifically are available only from the mid-1970s to the mid-1990s, estimates of the bureaucratic burden for the entire non-farm economy were derived over 1960-95 to allow some commentary on apparent developments throughout this longer period.

### **Measures of the extent of the managerial hierarchy.**

Comparative historical estimates of Gordon's 'bureaucratic burden' for the eleven advanced industrial nations which are the focus of this study are shown in Tables 8-11. The dating of the estimates is approximate, relying as they do on the availability of labour force surveys and censuses. The availability of statistics pertaining specifically to manufacturing was particularly uneven in the first years in which such decompositions began to be



possible, so that the first estimates for manufacturing specifically relate to an even wider span of years than do the other estimates, as indicated in the table. Gaps in the table indicate the absolute unavailability of the figures on occupational structure necessary for the construction of estimates of the relative extent of management.



|      | US   | Canada | Japan | Germany | France | Italy | UK  |
|------|------|--------|-------|---------|--------|-------|-----|
|      |      |        |       |         |        |       |     |
| 1960 | 8.6  | 9.6    | 3.3   | 3.6     | 4.1    | 1.8   | 2.8 |
| 1965 | 10.5 | 10.2   | 3.8   |         |        | 1.6   | 3.2 |
| 1970 | 8.2  | 10.6   | 4.9   | 2.4     | 3.3    | 0.8   | 3.8 |
| 1975 | 10.3 | 6.1    | 4.6   | 3.4     | 3.8    |       |     |
| 1980 | 11.1 | 5.4    | 4.4   | 3.1     | 0.3    | 8.4   | 10  |
| 1985 | 11.3 | 6.6    | 4     | 3.9     |        |       |     |
| 1990 | 12.6 | 13     | 4.1   | 3.9     |        |       |     |
| 1995 | 13.8 | 13.6   | 3.9   | 3.4     |        | 10.1  | 17  |

Table 8. The ‘bureaucratic burden’ in the non-farm economy, G7.

|         | US   | Canada | Japan | Germany | France | Italy | UK  |
|---------|------|--------|-------|---------|--------|-------|-----|
|         |      |        |       |         |        |       |     |
| 1975/78 | 7    |        | 4.4   | 2.7     |        |       |     |
| 1980    | 7.8  | 5.5    | 4.4   | 2.6     |        | 2.3   | 6.6 |
| 1985    | 10.8 | 7.1    | 3.9   | 2.9     |        |       |     |
| 1990    | 12.1 | 11.3   | 4     | 3.6     |        |       |     |
| 1995    | 13.8 | 12.8   | 3.9   | 2.9     |        | 1.9   |     |

Table 9. The ‘bureaucratic burden’ in manufacturing, G7.



|      | Austria | Finland | Norway | Sweden |
|------|---------|---------|--------|--------|
|      |         |         |        |        |
| 1960 | 1.9     | 2.5     | 4      | 2.5    |
| 1965 |         |         |        | 2.5    |
| 1970 | 0.7     | 2.2     | 4.1    | 2.4    |
| 1975 | 0.8     | 2.9     | 4.1    | 2.2    |
| 1980 | 1.6     | 3.4     | 5.5    | 2.4    |
| 1985 | 5.5     | 5       | 7.1    | 2.5    |
| 1990 | 6.1     | 4.8     | 7      | 2.7    |
| 1995 | 5.8     | 4.5     | 7.5    | 2.9    |

Table 10. The ‘bureaucratic burden’ in the non-farm economy, Austria and Nordic nations.

|         | Austria | Finland | Norway | Sweden |
|---------|---------|---------|--------|--------|
|         |         |         |        |        |
| 1975/78 |         | 2.7     | 4.7    | 1.7    |
| 1980    | 1.5     | 3.4     | 4.3 ,  | 2      |
| 1985    | 3.2     | 5.4     | 5.5    | 2      |
| 1990    | 3.7     | 5.6     | 5.8    | 1.7    |
| 1995    | 3.1     | 5.2     | 6.9    | 2      |

Table 11. The ‘bureaucratic burden’ in manufacturing, Austria and Nordic nations.



Broadly, these estimates of the extent of the managerial hierarchy suggest that it tends to be of greatest magnitude in Anglo-Saxon nations, being relatively limited in other countries. This, however, glosses over substantial historical variation in the bureaucratic burden apparent in the figures for most nations. The figures for Japan, West Germany, Sweden and, to a lesser extent Finland and Norway, display a relative stability over time. The figures for the US suggest a gradual growth in the extent of corporate bureaucracy. The figures available for the other nations show sudden and dramatic fluctuations over time.

Gordon (1994a, b; 1996) insists that the measures of the 'bureaucratic burden' and 'intensity of supervision' he derives reflect real differences in work organisation across nations. Though he argues that the experience of the ILO in compiling official statistics from a number of countries provides some guarantee of the cross-national comparability of the figures on occupational structure presented in the Yearbooks, the ILO itself expresses reservations about these statistics. As it notes, the figures depend critically on the designations used by the responsible bodies in the various nations in the preparation of their submissions to the ILO. The ILO requests that statistics are submitted to it according to the major groups of the prevailing ISCO, but this requires often substantial mapping from national classifications, a process which is often complex and approximate (ILO, 1990, XIV).

As regards the countries under study here, the historical statistics on occupational structure available in the Yearbooks for France and Italy are not only fragmentary and confusing, as Gordon (1994a) acknowledges, but indicate that there may be profound problems of data comparability. To an extent, the problems of data comparability are apparent in the very figures presented by Gordon himself in his unpublished work. Thus, Gordon's (1994a, Table 1) only quantitative depiction of comparative *historical* developments in occupational structure features figures for Italy which suggest implausible



leaps in the relative extent of managerial and administrative employment in the non-farm economy, with shifts between 1964 and 1978 from 11.6% to 3%. The same table shows the bureaucratic burden in the UK leaping from 2.9% in 1961 to 10.1% in 1981. Perhaps most interestingly, glancing beyond the countries under study here, Gordon (1994a, Table 1) also indicates that an identifiable 1986 change in the system of occupational classification applied in Australia brought such a shift in the mapping of individuals into the ISCO that the 'bureaucratic burden' in the non-farm sector derived rose from 6.8% in 1980 to 14.6% in 1989.

The comparative historical estimates of the bureaucratic burden derived here underscore these difficulties, particularly with regard to France, Italy and the UK. The fragmentary figures for the bureaucratic burden for the total non-agricultural economy, which are almost all that are obtainable for these nations, demonstrate absurd discontinuities. This renders comparisons between the extent of the managerial hierarchies typical amongst these nations, and between these and other nations, practically meaningless.

The general sensitivity of these ILO based figures on the extent of the managerial hierarchy to cross-national differences in the system of collation of information on the occupational structure are thus highlighted by the comparative historical statistics presented in the tables above. The consistency of the ILO indicators of occupational structure in the US with the indicators prepared by the Bureau of Labor Statistics may be less the expression of the general accuracy and thus cross-national comparability of the ILO statistics which Gordon (1994a) takes it to be, and rather more an expression of the importance of the shape of national classifications for the figures which appear in the ILO Yearbooks. In this context, alternative benchmarks of the occupational structure are of great potential value.



### Alternative benchmarks for the extent of the managerial hierarchy.

Some recent statistics on occupational structure are available for the four core EU nations of West Germany, France, Italy and the UK for 1991, in an authoritative treatment of sectoral employment in the contemporary members of the Union (ERECO, 1994, Table 4 - Table 21). The occupational decomposition, which is based on ISCO-88, a classification which seems to offer some advantages over ISCO-68 in the identification of managerial employees but otherwise differs little, allows the derivation of estimates of the extent of the managerial hierarchy for the economy as a whole and also for manufacturing specifically. The estimates of the extent of the managerial hierarchy are shown in Table 12 below. The two sets of national rankings implied are identical, with the apparent extent of the managerial hierarchy in the UK much the greatest, and West Germany, France and Italy in that descending order quite closely bunched.

|               | West Germany | France | Italy | UK   |
|---------------|--------------|--------|-------|------|
|               |              |        |       |      |
| Total economy | 6.1          | 4.2    | 1.2   | 14.8 |
| Manufacturing | 3.7          | 1.3    | 1     | 11.8 |

Table 12. ERECO based 'bureaucratic burden', European core nations.

Earlier EEC statistics on the occupational structure for the total economy in the 1970s, presented in OECD (1987, Table 3.5), promise a further opportunity for corroboration of relative managerial employment in the cases of West Germany, France and Italy. The figures were derived from extensive labour force surveys which, in the case of



France and West Germany, spanned 80-90% of the employed, and 55% in Italy (OECD, 1987, 79). Whilst there was broad agreement on the occupational definitions to be applied the task of classification was, however, left to the relevant national authorities (OECD, 1987, 95 n19). The comparative implications of the statistics for the extent of the managerial hierarchy, though they are covered by an idiosyncratic occupational decomposition, accord with those of the more recent ERECO (1994) statistics for the three contemporary EEC members covered. Whilst the comparative differences apparent are limited, the managerial hierarchy seems most extensive in West Germany, followed by France and Italy respectively.

Whilst these alternative figures for the largest European nations are of interest in the context of the profoundly confused picture of the comparative situation in these countries which emerges from the ILO tables, they cannot eradicate a general scepticism about the meaning of such aggregate figures on the reach of the managerial hierarchy. The relation of the comparative differences in the bureaucratic burden apparent in the alternative European statistics to the stylised facts established in case work in industrial relations, most clearly in the 'societal effects' tradition of comparative analysis (e.g. Maurice et al, 1986; Lane, 1989), is worrying. Lane (1989) reports substantial comparative work relating to West Germany, France and the UK which suggests that the extent of management in industry is much the most limited in West Germany, with France and the UK sharing a more common experience which has French companies, with, if anything, a slightly more extensive managerial hierarchy than is common in the UK. This cross-national comparative impression, which seems quite consistent with the impressions of others involved in case work in these European nations (see Ferner and Hyman, 1992; 1998), is quite at odds with the comparative representation provided by the European official statistical compilations.



With doubt thus cast on the validity of all official gauges of occupational structure, direct evidence of cross-national comparative differences in the treatment of occupational structure is of much interest. Beardwell & Holden (1994, 615) note that the very basis of conception of the occupational composition is quite different in France from that in Anglo-Saxon nations. In Anglo-Saxon nations the customary distinction is four-fold, distinguishing between management, professional/technical, clerical and manual employees. In contrast, in France, the customary division is three-fold, with 'cadres' (roughly, management with some professionals) distinguished from 'ETAM' (roughly, administrative, technical and advisory employees) and 'ouvriers' (operatives). This manifests the more general danger that any representation of occupational structure derived from nations' official statistics on may be severely contaminated by the prevailing national occupational distinctions, expressing more these than the actuality of work organisation on the ground. It seems that the problems of language and terminology are particularly acute with regard to occupational structure, rendering severely problematic efforts to analyse managerial hierarchies at a distance with official statistics. The constitution of official statistical categories is murky at such a distance, and the task of harmonising labels retrospectively massive.

Wright (1997) suggests that in Anglo-Saxon nations there seems a tendency to give particular regard to any management or supervisory activities in which an individual engages in the classification of the nature of their work, with the result that the extent of management apparent in the resulting statistics is inflated. This may simply be a reflection of the comparatively greater actual importance to Anglo-Saxon employers of the administrative and surveillance activities of its indirect employees, at worst exaggerating what are real differences between Anglo-Saxon and other nations in the nature of activities on the ground. It may however be purely a result of classificatory practice, belying a social reality of cross-national commonality in work practice.



A recent large scale international study has made a serious effort to classify occupations consistently according to the activities they involve. Wright (1997) provides an overview of the findings of this Comparative Class Analysis Project which, whilst employing local experts, implemented internationally agreed concepts in the survey investigation. One aspect of the questioning focused particularly on the issue of whether individuals' job roles involve the exercise of authority, taken as characteristic of supervisory or managerial activities. Although the questioning covered a large number of countries, the nations for which Wright (1997) considers the results reliable are limited. One of several minimum requirements is that more than 1000 respondents were questioned in the nation concerned in the course of the 1980s. Nevertheless, Wright (1997) does draw some comparative conclusions. As Gordon (1996, 45) notes, the rank order amongst four countries for which the results seem reliable is exactly that suggested by the ILO data, with the study suggesting that the relative extent of employment involving the exercise of authority is greatest in the US, with Canada ranked second, Norway third and Sweden fourth.

Thus, this comparative survey provides some reassurance of the validity of the ILO based indicators for at least some of the eleven countries treated here. But Wright (1997), whilst regarding the survey results for the UK as reliable, can of course offer no reassurance of the validity of the ILO based data for the UK, as there is no time consistent finding from the official statistics with which to compare his survey finding that the pattern of the exercise of authority in the UK is similar to that in Canada. Moreover, Wright (1997), cautious of the validity of his findings, offers no analysis at all of the pattern of the exercise of authority in the remainder of Europe or in Japan. Overall, then, the substantiation of the implications of the ILO statistics is limited. There must remain doubts about the general comparability of the ILO based measures of the extent of the managerial hierarchy across



countries, and indeed over time, even beyond the obviously problematic figures for the European core.

Where there is substantial evidence of cross-national comparative difference in the extent of relative managerial and administrative employment in manufacturing industry, there remains the issue of how this should best be interpreted. Esping-Andersen (1990, 202-3) suggests that what he terms the 'peculiar managerial bias' in the US may result in large measure from an internalisation by US corporations of activities necessary in every modern economy which are in other nations performed by the public sector. Thus, he argues, the extent of managerial and administrative employment in the US is largely a product of US corporations' provision of welfare benefits, their need to generate the functional equivalent of labour exchanges, and need to organise training internally.

Gordon (1996) argues that there is evidence that it is the further and final of the possible explanations for the extent of the US corporate bureaucracy offered by Esping-Andersen (1990) which is the key. Esping-Andersen (1990, 203) argues that the exceptional policing of US workforces, with 'armies of supervisory staff', provides another reason for the extent of managerial and administrative employment in the nation. Gordon (1996, 44-5) argues, with special reference to his findings for the US and Japan, that the general similarity of the bureaucratic burdens he derives for a nation's (predominantly private) manufacturing sector and that for its non-farm economy more generally (substantially public) suggests that the extent of the non-productive segment of employees in the US is not principally the result of a simple allocation of common tasks between the public and private sectors, but that it is largely the product of a strategy of labour control which relies heavily on monitoring and discipline.

Even if it is accepted that the limited indications of similarity between a nation's manufacturing bureaucratic burden and its non-farm bureaucratic burden is evidence that it



is not simply the case that in different nations activities are distributed differently amongst nations between the private and public sectors, Gordon's (1996) conclusion about the nature of employment relations in the US does not precisely follow. The evidence from the ILO statistics presented here, of some similarity in the extent of managerial employment in any nations' manufacturing sector to that in its entire economy, may just as well be evidence that it is the separation of conception from execution, as simply the intensity of monitoring, which distinguishes nations' typical employment relations. Moreover, the problematic nature of the official series on occupational structure already considered here should be recalled in assessing such subtle argumentation. Such occupational classifications seem a thin thread on which to hang such finely drawn conclusions about the nature of employment relations.

## **Conclusion.**

In general, one must conclude that figures on the relative extent of managerial employment drawn from official statistics should be regarded with extreme caution. In general, there are clearly such severe difficulties with the international comparability of the occupational classifications employed by the various nations, and with any attempt at allowing for the cross-national differences in data collection methodology, that little may be done in this area by an individual researcher. Particular problems are apparent in comparisons made amongst the largest European countries, most of all in estimates of the bureaucratic burden based on the statistics collated in ILO sources. Importantly, there are significant indications that the available official statistics do properly express differences in the relative extent of managerial employment amongst the US, Canada, Norway and Sweden, at least from the 1980s. Considered, detailed questioning on the nature of the tasks



undertaken by an individual offer the prospect of an accurate view of current cross-national differences in the relative extent of managerial employment. However, a still more intensive effort would be required to retrospectively render comparable the historical statistics on occupational structure which are available, and thus construct comparable comparative historical estimates of the extent of management. Even then, inferences about the nature of employment relations would remain problematic.



## 7. Conceiving the political economy

Few if any conclusions may be drawn from the obviously problematic benchmarks of the extent of the managerial hierarchy which are the best which could be derived here. The data derived on the rate of incidence of fatal injuries and on average annual hours of work are, however, dependable. These latter indicators relate to very well defined phenomena, and have been subject to extensive corroboration. The unique data field which they constitute represents, in effect, an exemplary longitudinal survey of the typical state of work humanisation in the manufacturing sectors of a variety of institutionally distinct societies, albeit a survey of extremely limited scope.

The statistical assessment of the comparative historical pattern of developments in hours and in fatal injuries presented in previous chapters confirms what a cursory glance at the plots of the data derived suggest, that to the extent that convergence has occurred, it is uneven and limited. No relentless and ongoing homogenisation in work humanization is apparent. Of particular interest, developments in the last years spanned by the data, when the play of global forces is alleged to have hugely intensified, exhibit no historic collapse of national distinctiveness remarkable in comparison with earlier junctures.

This chapter argues that an appeal to ‘culture’ is an inadequate response to the findings of enduring societal diversity. It seeks to lay the basis for the extension of the analysis of developments in work humanization by establishing a quantitative characterisation of the shape of the broad political economy. Particular attention is given to the derivation of indicators of the power resources of employees. There is an extensive discussion of the meaning of these indicators.



## **What might underlie societal distinctiveness?**

Enduring cross-societal variation in working conditions implies that there are limits to the operation of ubiquitous technological or economic forces. Kerr et al's (1960) 'logic of industrialism' does not determine the humanization of work, even in the 1990s. The continuing cross-societal diversity in experiences of working conditions raises the question of the conditions which might underlie national distinctiveness. It might simply be attributed to differing, and shifting, national cultures. In whichever way they are interpreted, however, conjectures of this sort are unsatisfactory. On one interpretation, there is a parallel to a form of explanation parodied by the historian E.H. Carr. Carr (1961) highlights the inadequacy of an explanation of the well-known tendency of milk put to boil in a saucepan to boil over which rests on an assumption that milk has a peculiar propensity to boil over. Such explanation is entirely vacuous.

The insistence that comparative historical differences in work humanization have their origins in culture might otherwise be interpreted as a simple assertion that any immediately puzzling patterns in social reality must necessarily have resulted from innate, though unspecified, national characteristics. The Panglossian view that societal differences must result from some optimal aggregation of active individual choices has in many respects a similar flavour. Both conjectures immediately attribute the basis of variation to a residual category, foreclosing further analysis with an appeal to meta-theoretical presumption. No opportunity is afforded for the meta-physical to be pushed back, and the rationale of social scientific enquiry is effectively undercut.

The possible roles of ignorance and uncertainty, ideology and institutions, suggest that there may be much to gain for social researchers in seeking to unpack societal settlements a little. It seems worth investigating the influences on working conditions



further, in effect contemplating a little more thoroughly how and where 'culture' or 'choice' might enter. This involves a willingness to consider a form of analysis which recognises the importance of social relations and of politics.

In attempts that delve into the origins of comparative historical developments in employment relations it has not been unusual for scholars and commentators to refer to the role of the institutional environment (e.g. Clegg, 1976; Ferner & Hyman, 1998a). In the last couple of decades, much interest has centred on the notion of 'corporatism', often prefixed with neo- or social to distinguish it from variants of fascism. The notion of social corporatism has been rather distasteful to several authors, most notably Panitch (e.g. 1980), but to many others has embodied the possibilities of social action (see Therborn, 1992).

Interest in the notion was particularly acute in economics, where corporatism was conceived initially as a simple institutional centralisation of wage bargaining, and held to account for the relatively low unemployment rates in the Nordic nations (Calmfors & Driffill, 1988). The simplicity of the idea was seductive. Studies sought to assess the relevance of social corporatism to outcomes such as productivity growth, arguing that the employment relationship itself was rather different in corporatist nations (e.g. Dowrick, 1993). However, the non-correspondence between various aspects of macro performance and the initial indices of corporatism brought a re-assessment of the scores assigned a number of countries, most notably West Germany and Japan (see Crouch, 1992; 1993; Dowrick, 1993; Edwards & Elger, 1999). The dangers of circular reasoning, with the classification of the institutional matrices of social systems made simply according to their comparative performance on the particular macro aggregate of interest, became increasingly obvious.

The meaning of social corporatism remained elusive as this programme of work developed (see Therborn, 1992; Edwards, 1994; Edwards & Elger, 1999). Cameron (1984)



commented on the conflation in the notion of corporatism of societal structures facilitating cross-class collaboration and the collaborative behaviours themselves. If nothing else, corporatism seemed conceived in contra-distinction to arms-length bargaining. Yet Therborn (1986), in his discussion of the comparative unemployment performance of nations, stressed that institutionalised consensus building existed in a number of countries with quite different political economic environments, and disparate unemployment records. Rowthorn (1992) highlighted the very different patterns of income distribution across countries commonly lumped together as corporatist, stressing in particular the remarkably narrow distribution of income in Sweden, and the comparative inequality of Austria.

There is underlying the economics literature a tendency to assume not only that a common policy thrust should emerge in corporatist settings, but also an apparent belief that given only peak level negotiations everything could be determined in central negotiations between representative actors and subsequently imposed on employers and employees. Edwards (1986) notes the general impossibility of such a central negotiation of workplace order, and stresses the two way relationship between national politics and the politics at the point of production. Yet social corporatist theorisations have often implied that centrally bargained wages determine employment, which of itself then has implications for such outcomes as working hours, productivity, and take home pay, rather than taking on the possibility of a more complex causal structure (e.g. Pekkarinen et al, 1992).

Therborn's (1992) review of corporatist theorisations concluded that little was to be gained from further attempts to refine a uni-dimensional index of the nature of a socio-political system, and thus that the literature had reached something of a dead end. Nonetheless, he argues the importance of many of the contributions to the corporatist debate, stressing the significance of its highlighting of the comparative historical variations in



experience with regard to employment relations, the variably realised potential of labour movements, and the centrality of actors' framing of the situation facing them.

Consistent with such reflections, many other scholars have played down social corporatism, and indeed the institutional environment, *per se*, emphasising instead the broader political or ideological climate (e.g. Fulcher, 1991; Pontusson, 1992a; Turner, 1991; Crouch & Streeck, 1997a; Hyman, 1997a). Those most conscious of, or comfortable with, the influence of Marxist analysis on their thought allude to the significance of the balance of social forces, or of the balance of power in civil society (see e.g. Stephens, 1979; Cameron, 1984; Ferner and Hyman, 1992a; Nichols, 1997).

Allusion to what are essentially class forces may well seem out of place in the modern Anglo-Saxon world, often characterised as it is as being devoid of distinct, let alone contradictory, interests. The allusion also sits uneasily with post-structuralist approaches to social science which play down the significance of actors' relations to the means of production (see Delanty, 1997). Nevertheless, this thesis seeks in particular to investigate the relevance of the relative strength of labour to national developments in working conditions, the implicit suspicion being that those who deny its role gloss over much of the employment relations action in contemporary societies. Panel econometric methods can be brought to bear on these issues, providing only that quantitative indicators of the balance of social forces can be identified.

## **Operationalising the relative strength of labour**

Swedish 'social democratic theorists' have pursued the significance of the balance of power in civil society for political economic developments within capitalism in a more detailed way than any other community of scholars (see Fulcher, 1991). Korpi's (1978:



1983) notion of the 'power resources' of labour, the resources on which employees can call to sanction their employers and to shield themselves from harm, provides a starting point for the operationalisation of the rather nebulous concept of the balance of power between capital and labour. Korpi (1983) stresses the importance of the degree of disadvantage of wage earners relative to that of business for the nature of societal bargaining and the resulting social settlements. Indeed, he argues that the distribution of power resources between these major collectivities is critical to social consciousness and aspirations – to social perceptions of what is fair and just and to the conception of what are social problems. Thus, power resources are of relevance for the institutional framework, and for the operation of those institutions.

The argument is bolstered by Esping-Andersen's (1990) observation that in the post-war period, across the advanced capitalist world, the left coalesced around a social democratic project, leaving behind the sharply differing discourses of the pre-war period. For the labour movements of the advanced capitalist world, the question then became one of advancing an agenda of reform with real international commonalities. The national movements' various power resources shaped the immediate ambition of social democratic reform, the terrain on which a common democratic class struggle was then waged (Korpi, 1978; 1983). Whilst the basis of capitalism may not have been challenged, the terms of the subordination of labour has thus varied significantly.

The specific term 'power resources' now has common currency in debates around social corporatism, labour movement theory and social democracy. US scholars with similar interests in cross-national comparative developments tend to emphasise the relevance of an individual's exposure to the labour market, using the concept of the 'cost of job loss' faced by an employee (e.g. Gordon, 1994). Although European social democratic theorists' use of the term generally emphasises the collective resources of organised labour, such scholars



generally do acknowledge the relevance of the resources on which individual employees may call, but stress the relevance of this for employees preparedness to enter into (or not undermine) collective action (e.g. Korpi, 1983). Nevertheless, the power resource notion can reasonably be used to encompass the concept of the 'cost of job loss' which has emerged in the US.

Specific quantitative indicators of the relative strength of labour are required to advance an econometric investigation of the relation of the cross-national comparative pattern of working conditions to the shape of national political economies. Econometric analysis thus demands a quantitative representation of the precariousness of employees' situation in work relations. The focus here is the characterisation, in as far as is possible with aggregate quantitative data, those aspects of the political economy which seem of relevance to the situation of the employee vis-a-vis employers, i.e. aspects relating to her vulnerability (or exposure) to managerial prerogative, whether as an individual or as part of a wider collectivity.

Efforts at the quantitative characterisation of the power resources of labour confront the profoundly problematic nature of attempts to pin numbers on specific aspects of the statutory frameworks of collective bargaining relating to, for example, employment security, the right to strike, employee participation and the work environment. The various attempts to assign numerical values to national systems of regulation such as those presented in by the OECD (1994, Table 6.7) in its Jobs Study (Part II) seem selective in their treatment of the relevant national regulations, just as were the efforts to quantify the extent of state provision for the unemployed (see, e.g. Layard et al, 1991). The related efforts to enumerate the extent of corporatism demonstrated the depths of the difficulties in establishing the criteria from which quantification should proceed, and highlighted the dangers of an ad hoc, and indeed circular, reasoning in assigning indices of corporatism to which measures of



economic performance were then compared. Moreover, all such attempts have struggled to offer any quantitative characterisation of political economic developments over time in the nations to which they relate.

For the purposes of this study, the deeply problematic scoring of statutory regulation and of corporatism was set aside in favour of the derivation of better established quantitative data on the shape of the national political economy. Concentration was not on such specific aspects of labour regulation but on the measurement of the more readily enumerable broader context of employment relations which relate to the relative strength of labour. This is not to say that there are not difficulties in the preparation and use of longer standing indicators of the vulnerability of employees. However, whilst issues of quantification of course remain, these indicators have the merit of having been subject to the attention of a massive array of statisticians and social scientists. These long standing gauges also offer the possibility of some historical analysis. Their well established nature also guards against the temptation to revise or adjust the indices according to the employment relations outcomes on which the econometric analysis focuses. Finally, there are advantages in the very crudeness of such indicators, there being less temptation to interpret any relations between them and the indicators of work humanization mechanistically as cause and effect.

### **The influence of organized labour.**

Kelly (1998) argues that it is common for commentaries on collective bargaining to appeal to the balance of power of the parties, but rare that they explore its substance. Developments in Britain since the close of the 1970s have prompted much discussion of the position of organised labour in particular. Commentaries that seek to offer an overview of the situation in the country as a whole have stressed the importance for organisation and



mobilisation of legislative change and of the demonstrative effects of a relatively small number of major conflicts (see e.g. Edwards, 1986; Fulcher, 1991). However, scholars have struggled to offer evidence of broad shifts in the strength of union organisation which is to their own satisfaction (e.g. Terry, 1986). Kelly (1998) himself stresses the difficulty of gauging the national position of organised labour, citing inadequacies in the most common indicators.

Union density is commonly employed as *the* key gauge of the power resources of organised labour (Visser, 1992), and even thus of the balance of social forces (see Pontusson, 1984; 1992a), which it seems natural to feature in an empirical study such as this. Yet despite such perspectives, and indeed despite the attention given to precise quantification in this area by Bain and Price (1980), and in the country studies featuring in Ferner & Hyman (1998), British industrial relations scholars tend to share Kelly's scepticism about the significance of union density. Fortunately, a number of contributions, many of which arose from the debates around (neo-)corporatism, aid an assessment. The very construction of density series raised vital issues, however, and it is to these that I first turn.

### ***The construction of measures of union membership density.***

The derivation of measures of union density itself involves considerations which are an expression of the problems of interpretation of national collective bargaining arrangements, and indeed of the ubiquitous difficulties of the enumeration of social phenomena. The construction of *meaningful* series for union density rests on the collation of historical and cross-national comparative statistics which reflect the comparison of like with like. The process involves assumptions about the functional equivalence of the



representative organisations found in the eleven countries featured in this study and at different stages of their societal development.

The statistics commonly cited relate to the membership of enduring secondary or intermediate organisations professing a pursuit of employees' welfare (e.g. Bain & Price, 1980; Price, 1989; Visser, 1992). There is no regard to the complexion of these unions of which individuals are members, or indeed to the broader nature of the national union movement, if any, with which they interface (see, e.g. Visser, 1992; Crouch, 1992, Hyman, 1997b). This procedure utterly disregards the ideological divisions amongst unions, amongst confederations and between these confederations and their affiliates, both within and across societies. The memberships of (revolutionary) communist, social democratic (i.e. Socialist International), and occupationally or enterprise based unions are treated as equivalent for the purpose of the construction of rates of union density. Cross-national differences in union movements' external structure, articulation, orientation, strategy and efficacy are also neglected.

In effect, then, membership density statistics gloss over key debates centred around the purchase of sectionalist trade, company or plant unionism relative to that of encompassing class unionism; around the effectiveness of an aloof non-collaborationist stance; and indeed around the issue of union identity itself (e.g. Kelly, 1989; Visser, 1992, eg 22-3; Franzosi, 1995, eg 234-6; Hyman, 1992, eg 162; and Hyman, 1997b). Relatedly, the calculation of density masks the issue of the relevance of the oft used term 'labour movement' to what may in some national cases be a very loose coalition between narrowly based unions engaged in fragmented opportunism, themselves with tenuous links to a political party of quite ill-defined reformist credentials.

Aside from these crucial issues there remain more mundane problems in the derivation of density rates. Figures relating to particular sectors are too sporadic to allow the



collation of a rate for manufacturing specifically, leaving no option but the collation of aggregate union density figures for societies as entities. In the instances of some countries, such as France, there are problems with the availability of membership counts on *any* consistent basis (Jeffreys, 1996; Goetschy, 1998). More generally, however, there are conceptual problems in the actual construction of a series for membership across the society as a whole (Visser, 1989; 1992, 21). In part these relate to the proper treatment of membership amongst students, the self-employed, the unemployed and the retired, and in part they are an expression of the need to confront the issue of the status of grassroots representative organisations functioning as local pressure groups, and the veiled nature of this phenomena.

Even once a judgement on these issues of membership is made, the construction of the union density measure remains problematic. There is no unanimity on the appropriate conception of potential membership, with disagreements particularly acute around the issue of whether the labour force or only the non-agricultural labour force is relevant (and indeed whether this decision should be sensitive to the national industrial composition). Similarly, there are differing views on the broader issue of whether the benchmark against which the extent of membership should be judged should be defined more broadly than any notion of a capitalist labour force (Price, 1989; Visser, 1989; 1992).

Despite the conceptual problems arising in the preparation of series for union density, the existing measures do have certain connotations and associations, comparatively and historically, with aspects of national political economies which seem themselves of potential relevance for the power resources of employees. In this sense the density of union membership constitutes a crude compound proxy of some depth of meaning and importance in the context of this study.



### *The significance of membership density.*

Korpi (1978, 1983) emphasises the significance of aggregate union density of itself as a power resource. A weight of union membership represents a collective capacity for action in the industrial arena which can reap benefits in terms of the scope and content of collective agreements. Moreover, it is clear that Korpi (1978) regards union membership not only as a resource which can be used to inflict damage on recalcitrant employers but as having a fundamental role in the attenuation of the competition between workers which he, citing Marx and Engels, considers vital to the actually existing capitalist system. In Clegg's (1976, 8) terms, union density seems also likely to be related to 'union security', with employers facing extensive organisation likely to take a more sympathetic attitude to membership and members.

Remaining within the industrial arena, there seems a further reason to highlight aggregate union density as a key facet of the political economy. Membership density would seem critical to the efficacy of the joint regulation of the workplace, expressing the typical extent of local union presence and thus the bargaining depth and 'degree of control' which Clegg (1976, 8) argues are vital to ensure that collectively bargained agreements have an impact on the ground. It is not simply that employees are thus better aware of their rights, but that there is present an alternative culture which stresses the legitimacy of employee welfare, and is able to engage to some extent with management discourse to challenge existing managerial orientations and organisational arrangements and effect practical change. Density seems of similar relevance for the implementation of the prevailing statutory regulations regarding industrial and employment relations. The organisation of the working class, expressed in union density, can thus, as Korpi (1983) argues, be a force shaping the operation of existing institutions. In more current terminology, expressing the



concerns of the 1990s (e.g. Streeck, 1997), labour organisation may help to contain the hollowing out of institutional arrangements. High aggregate density may well, for example, act as a brake on de facto erosion of the impact of more centralised collective agreements in the workplace, or on the undermining of company and plant level co-determination arrangements, helping to preserve the substance of joint regulation.

In part, the significance of the extent of unionism within national borders may lie in its role in delimiting the opportunity of employers to nullify or erode substantial developments through playing a unionised workforce off against a non-unionised, or more broadly in circumscribing the undermining of unionised companies by non-unionised ones. This is not to argue that ‘whip-sawing’ (Kochan, Lansbury & MacDuffie, 1997), or ‘coercive comparison’ (Ferner and Edwards, 1995), never occurs between unionised plants. Nor is it intended to deny that the legal extension of coverage of collective agreements, as opposed to density, may be an important influence on the space for the hollowing out of collective bargaining and statutory regulation in the more active establishments. Nevertheless, density may well be of relevance where such employer divide and rule strategies are concerned.

Whilst it is clear that the causality involved is very complex, there does seem some historical and cross-sectional relation between labour organization and collective mobilisation, and most particularly with the number of strikers or relative involvement in strikes (Kelly, 1989; Shalev, 1992, especially Fig 3.6; Hyman, 1994a; Franzosi, 1995, e.g. 125, 343). Kelly (1998, Tables 6.3-6.6) presents comparative historical evidence of the relations between union membership and strike waves in particular. Even within the Nordic cluster, there has been a modern historic tendency for fiercer explosions of strike activity, whether gauged by the number of incidents, or the relative involvement of employees, to be associated with a more rapid growth in union density (Stokke, 1999). The association



between strike activity and union density may even be complemented by a relation between the competence of union activists and union density, to the extent that militancy nurtures new leadership resources in the manner suggested by Franzosi (1995, 290).

There seems to be clear evidence of a cross-national relation between union density and centralised, or indeed coordinated, collective bargaining (e.g. ILO, 1993, Chart 3). At minimum, then, there seems a strong comparative association between union density and corporatism as conceived in the narrow manner common in the mainstream of economics (e.g. Calmfors & Driffill, 1988; Dowrick, 1993). Amongst the countries studied here, Italy and Finland have seen particularly dramatic shifts in union density, shifts which have been associated with equally dramatic developments in the arrangements for peak level bargaining (see e.g. Ferner & Hyman, 1992b; Lilja, 1992). There is evidence too, then, of an historical relation between membership density and peak level collective bargaining. The relation between the involvement of unions in the administration of unemployment benefit in Finland and Sweden and the exceptional growth of membership in these countries in the 1980s noted by Crouch (1992; 1993) is one indication that the relation between union density and a more encompassing notion of social (or neo-) corporatism could be even more substantial. Fulcher (1991, 4) stresses the close historical and comparative relation between all the traditional gauges of social corporatism and those of the power resources of the labour movement, amongst which union density is generally thought central. His comments are largely based on the work of Cameron (1984), itself a seminal contribution in the literature on the organisational resources of labour.

Cameron (1984, 165 & Table 7.6) attributes scores to various facets of labour interest representation, the 'structural attributes' and 'loci of activity' of the union movement, for 18 OECD countries for the period 1965-1980. His analysis suggests very substantial and statistically significant cross-sectional relations between union density,



organizational unity, bargaining centralisation, bargaining coordination and indeed company level co-determination. Moreover, the quantitative summary measure of the organisational resources of labour which Cameron goes on to derive is closely related to social democratic participation in government (1984, 167: Fig. 7.9), to the extent that he considers it fruitless to enter both in regression analyses (1984, 178: en 35). The innovative work of Stephens (1979, 112-3), highlighting the cross-national association of the extent of labour organisation, social democratic participation in government, the centralisation of collective bargaining and the coherence of the union and labour movements, seems a critical influence on such contributions.

The relation of density to the coherence of union movements may in part be an indication of the relative ease of recruitment where unions do not compete one with another for membership. A centralisation of ideological, organisational and financial resources seems likely to ease labour organisation. In any case, as Crouch (1992) stresses, the effective articulation of the union movement, and particularly the ability of peak level actors to exercise discipline over local memberships which nonetheless feel involved, seems vital for what he terms neo-corporatism. This is often associated with the very highest levels of union density.

The extra-organizational significance of union density is apparent historically and cross-sectionally. Density often has an association with tripartite concertation which corresponds with the limits to the association between membership and militancy (Visser, 1992, 23). As Korpi (1983) famously stresses, the potential for collective action in the industrial realm inherent in unionisation may be translated into influence and gains in the political arena. Even in the absence of a government allied to the union movement, industrial muscle, where tempered by the articulation necessary for union leaders to deliver an end to industrial action on the ground, may nurture an ongoing generalised political



exchange with employers and the state which embeds a tripartite approach to political-economic management amounting to social corporatism (Pizzorno, 1978; Korpi, 1978; 1983; Crouch, 1993). This may result partly from unions immediate mobilization potential in the industrial arena, but also partly from the competition of the governing party with social democratic and other leftist parties allied to the unions, a competition nurturing a 'contagion from the left' (Hicks & Swank, 1992). Whatever the name of the governing party of parties, unions' collective capacity for action need not necessarily be expressed as militancy. The organisational resources of labour may not be reflected in the strike data, whatever the complexion of the governing coalition.

Density does also reflect something of the influence of the political arm of the labour movement of itself. Density is related closely, comparatively and indeed historically, to social democratic participation in the legislature and the executive (Korpi, 1983, 198; 1989, 323; Hicks & Swank, 1992, Table 2). There is also some evidence that the extent of union membership tends to be associated with the membership of communist or social democratic parties (e.g. Franzosi, 1995, 137). Moreover, Korpi (1989) stresses that parties labelled social democratic may have an impact on the polity independent of their presence in the legislature or executive, as a contagion from the left infects more conservative parties eager to maintain their hold on power numbers in the executive with an enthusiasm for reform. This shift in the agenda of the polity might be thought to happen in part due to the injection of a new discourse into politics. Relatedly, the success of social democracy with which density is associated may indicate something of the cohesion of the political and industrial arms of organised labour, i.e. of the labour movement in the broadest sense.

The apparent comparative association between the statutory regulation of employment and industrial relations sympathetic to employees, and union density seems at least in part related to social democratic politics. Whilst political exchange between a



coherent union movement and a non-social democratic government may certainly bring legislation on employment protection, the work environment and co-determination, a social democratic presence seems likely to facilitate this. The shape and coherence of the entire labour movement seems relevant to statutory innovations with regard to social rights in the workplace.

It should be noted, however, that the implications for manufacturing of the concertation which tends to be associated with greater aggregate union membership density may be limited by the relative significance of the sector as an employer and indeed a producer. There has been some suggestion that political commitment to innovation in work organisation in Norwegian manufacturing was stunted by the comparatively limited employment significance of the sector, and, in the context of the lucrative oil industry, its disproportionately small contribution to national value added (see Cole, 1989).

Reinforcing the influence of the sheer 'weight of numbers' in manufacturing on political priorities, the employment significance of the manufacturing sector may be associated with the cohesion of the union movement. A weighty manufacturing sector may nurture a more coherent union movement. An extensive manufacturing sector may imply commonalities in the contemporary agendas of constituent unions, or rather limits to the fragmentation of the confederal agenda which has been the subject of recent discussion in the case of the Swedish LO, with the rise of the public sector union, Kommunal (e.g. Glyn, 1995). Relatedly, the extent of the manufacturing sector may well have implications for the discipline of the union movement which is commonly regarded critical for effective political exchange (Korpi, 1978; Pontusson, 1984; Crouch, 1993).

The weight of the manufacturing sector may also express something of the historic efficacy of the union movement. The unionism of manufacturing has a relatively long pedigree. The employment and membership weight of this sector, in which articulation may



well be better entrenched, may aid political exchange. Moreover, to the extent that unions have sought to preserve manufacturing jobs, either simply as they are their members' jobs, or as they are viewed as relatively good jobs, extensive manufacturing industry may be a heritage of effective interest representation.

Moreover, the work of Streeck (1992), Crouch (1993), Crouch & Streeck (1997a) and Scharpf (1999) suggests that societies with more extensive exposed sectors feature more participative employment relations. Since manufacturing industry is the core of the exposed sector, more extensive manufacturing activities may well indicate a more advanced system of direct and indirect employee participation at workplace and company level. A greater share of manufacturing in total employment may thus express something more of the substance of statutory rights to participation such as works council and co-determination arrangements. In this way, the share of manufacturing employment might even be taken as an indication of the maturity of the labour movement, of the sophistication of its claims; a last step which of course presupposes the necessity of an historic compromise with employers.

Aggregate union density itself may have a further meaning beyond those discussed above. In the context of an ongoing generalized political exchange union density may not only shape political developments but may in part be *an expression of* the efficacy of unions in advancing interest representation in the broad political arena. Several authors have attributed the divergence in trends in societal union density since the early 1980s to cross-national variation in the depth of statutory buttressing of union effectiveness and legitimacy (e.g. Turner, 1991; Terry, 1994). Representative structures with statutory support provide a crutch, attenuating union dependence on managerial goodwill, and sustaining the local effectiveness of labour organisation. Moreover, Terry (1994), drawing on the argument of Walter Müller-Jentsch (1985), suggests that the insulation from the immediate concerns of



the membership afforded a union by a statutory role encourages innovation in joint regulation, and may thus contribute to its effectiveness and, ultimately, membership. In a very real sense, the incidence of membership may thus not only imply a certain organisational potential but be a reflection of it.

In various ways, then, the institution of co-determination, but also of individual rights to representation, can thus underpin stability and even growth in union membership against a backdrop unfavourable in other respects (see also Hyman, 1997a). To some extent though, statutory reform itself seems an expression of a strategic orientation in the broader union organisation which Turner (1991) and Terry (1994), for example, regard as critical. It may be the external support for company or workplace activities which is provided by such an overarching approach that is important for the local union effectiveness which can sustain membership. Relatedly, in the context of the general coalescence of the Left in advanced capitalist societies around a social democratic project in the post-war period (Esping-Andersen, 1990), massive union density may reflect specific initiatives taking effect outside the workplace. Density may well thus be in part express the success of unions in enhancing the 'social wage' to which employees are entitled, as well as in bolstering the individual and collective rights of employees.

Relatedly, density may reflect the assurance and sense of solidarity afforded employees by social protection measures (Korpi, 1978; 1983; Esping-Andersen, 1990), as well as expressing the importance of a statutory underpinning to union activity. Such considerations seem likely to have played a role in the cross-national correlations between the indicators of the power resources of labour movements and the indicators of inequality, redistribution and poverty spanning the period 1959-78 which are reported by Korpi (1983, 198). At the same time, of course, social rights, and even social expenditures, may be regarded as an expression of the success of the labour movement's efforts to shift conflict



into the political arena, revealing more about its broad power resources than does union density in isolation.

In some cases there seems a very immediate sense in which union density is buttressed by a heritage of generalised political exchange. Where, as in Belgium and Denmark, and as in Finland and Sweden amongst the countries under study here, unions have an established role in the administration of unemployment benefit, it seems clear that membership density has benefited (Crouch, 1992). This is despite their inability to simply deny benefits to claimants under the Ghent system. All this is not of course to suggest that membership encouraged by such considerations cannot then be of significance for workplace developments, but simply to emphasise the mutual conditioning of union density and decisions in the political arena.

In summary, amongst the available quantitative indicators, a measure of the density of union membership seems the most ready proxy of the collective organisational resources of labour in a broad sense, an indicator which encompasses (or conflates) industrial and political muscle. The empirical relation between the situation in the industrial and political arenas, between the organisational and extra-organisational, was emphasised early in the twentieth century by Rosa Luxemburg (see Franzosi, 1995). The relation of union density to both strike activity and to concertation complicates this sort of interpretation. This relation of influence in industrial and political spheres is stressed now by power resource scholars such as Korpi and Esping-Andersen (1984), who suggest that a nation's union density is associated with the broad societal influence of social democracy.

In his seminal work, Stephens (1979, 90-1) regards density as a gauge of the strength and vitality of the union movement, and a partial indication of the hegemony of labour, the distribution of power in civil society. Writing more recently, Visser (1992, 22; 24) regards union density as a useful rough and ready proxy for the strength of the labour movement,



whilst emphasising the necessity of attention to other contextual factors - to the means by which numbers become compelling for employers and the state. Density's associations in practice imply that it constitutes a composite which conflates the position of the labour movement across both the industrial and political arenas, but does constitute a crude quantitative indicator of the resources and influence of organised labour. The construction of series for employed membership density is detailed in the appendix.

### **The welfare state.**

At least since Bismarck's and Von Taaffe's late nineteenth-century innovations in welfare provision, welfare states have played central roles in the attempts of some political elites to forge nations (see e.g. Esping-Andersen, 1996a). In the succeeding years, and particularly since World War II, the employment of the notion of social citizenship has become increasingly prominent, as the use of welfare states to cement and shape nations has become more common across the advanced capitalist countries (Esping-Andersen, 1996b). These developments were nurtured in large part by the coalescence of labour movements in the wake of World War II around social democratic programmes of reform which had at their heart the expansion of the welfare state, programmes which forged new welfare trajectories in many countries in the period, marking breaks from pre-war traditions (Esping-Andersen, 1990). Even after the retrenchments of the 1980s and 1990s, significant social provision remains in all advanced industrialised countries, and highly developed welfare states persist in some.



### *The pertinence of public social provision.*

Whilst a nation's social policy may extend well beyond the provision of social protection in the form of publicly funded benefits in cash or in kind (e.g. Korpi, 1983; Korpi, 1989; Esping-Andersen, 1990; 1992; European Union, 1996), the adequacy of the welfare state does nonetheless constitute a vital aspect of an individual employee's situation (Esping-Andersen, 1990; 1992). In many respects, individuals access to welfare provision in modern capitalism may be considered analogous to access to common land, or to the ownership of a small holding. Like common land or a smallholding, a social right to welfare represents an alternative source of income to that offered by employers. Welfare provision weakens the urgency of an individual's need to market her labour power - it is, in the terminology of social democratic theorists, 'de-commodifying' (e.g. Esping-Andersen & Korpi, 1984, 183). The importance of the 'social wage' to the exposure of the population to the whip of the market is stressed by many other authors (e.g. Wilensky & Turner, 1987, 8). The more universalistic welfare systems embody an acceptance that the only meaningful conception of poverty is relative, and thus do not expose individuals to a provision based on an assessment of minimum physical requirements. These more universalistic systems thus tend to deliberately limit the relative deprivation of those turning to the state for assistance.

The attenuation of the vulnerability of individual employees by welfare provision implies, in the terminology of the US radical political economy school, that the welfare state reduces the 'cost of job loss' which an individual faces (e.g. Gordon, 1994b). Expressed in the terminology of so-called social democratic theorists such as Korpi and Esping-Andersen, social protection certainly represents a 'power resource' at an individual level. But through its implications for individual vulnerability, the availability of a social wage may also serve



as a basis for collective mobilisation. The availability of an alternative means of existence may well nurture a greater willingness to pursue industrial action amongst the aggrieved, and obviate the social stratification which can encourage others to undermine instances of organised industrial action by offering themselves as replacements for employees engaged in collective protest (Korpi, 1983; Esping-Andersen, 1990).

Although a number of scholars make some reference to it (e.g. Stephens, 1979; Korpi, 1983; Huber, Ragin & Stephens, 1993; Esping-Andersen, 1996b), the financing of welfare states has been subject to relatively limited attention in writings on social protection. This is in part because cross-national differences in the balance of financing between general taxation, employers', and employees' contributions, appear limited. Moreover, welfare provision seems of relevance to employee vulnerability even regardless of the means by which the programmes implemented are financed. There is substantial evidence that the populations of more unequal advanced capitalist societies tend to be less healthy, and that within any one society, those on lower incomes tend to suffer more ill health. The association of relative deprivation and ill health has been attributed to the stress engendered by the sense of personal inadequacy and failure experienced by those on relatively low incomes (see e.g. Wilkinson, 1996). Inasmuch as it is relative, rather than absolute, deprivation which employees suffer and fear, the balance of fiscal responsibility between capital and labour seems of limited importance to the impact of welfare provision. The welfare state need not be financed by employers to be of benefit to employees. A programme financed primarily from employees' income, involving a redistribution amongst wage and salary earners, may well thus imply a reduction in the 'cost of job loss' as the lifestyle to which employees are accustomed, and to which they aspire, is less expensive.



### *Characterising welfare state provision*

Welfare states seem best characterised according to the entitlements which they afford the individual – on the basis of the social rights they guarantee (Korpi, 1983; Esping-Andersen, 1992; Väisänen, 1992). The comparative benchmarks of the social rights of citizens which have been constructed in recent years are based on careful assessments of conditions of eligibility, income replacement rates, and the coverage of social insurance in nations at particular points in time (e.g. Korpi, 1989; Esping-Andersen, 1990). They thus offer precise indications of the material meaning of the available social protection for the typical citizen.

More than this, measures of welfare provision based on social rights bear on the non-material aspects of the experience of claiming benefits. Social rights express in large part the basis of provision; whether it be offered on a universalistic basis or according to proven need. By taking explicit account of qualifying criteria they capture something of the stigma of seeking help from the state. People are generally reluctant to subject themselves to means testing, to suffer the indignity of an intrusive and ongoing assessment of their need for social assistance based on a notion that there is an identifiable group of ‘deserving poor’. Through its reinforcement of feelings of individual failure, means tested welfare provision plays a punitive role. The contrast with systems under which benefits are available as a right of citizenship, and indeed with those under which benefits are provided in accordance with individuals’ records of social insurance contributions, is stark. The latter systems acknowledge in their very nature the social structuring of the situations in which individuals find themselves, rather than implying that an appeal to state provision is to be assumed an indication of failure.



Social democratic theorists express profound misgivings about the adequacy of a characterisation of welfare states based on expenditure rather than social rights (e.g. Korpi, 1989; Esping-Andersen, 1992; Väisänen, 1992). Whilst it has become increasingly common for scholars seeking to depict welfare state regimes to appeal to indices of social rights, much of the comparative historical work done in political science on welfare state development has relied on measures of social spending (e.g. Wilensky, 1975; Stephens, 1979; Pampel & Williamson, 1988; Hicks & Swank, 1992). In this quantitative political science literature, attention has focused on the proportion of GDP devoted by a nation to social protection, in the forms of both cash and in-kind benefits, data which is quite readily available. This proportion, the share of the total social wage in national income, is termed a nation's 'welfare effort'. The scaling of the expenditure by GDP is intended to control for the resources a nation has at its disposal, but the procedure also has the benefit of producing a gauge of expenditure which implicitly recognises the pertinence of relative (as opposed to absolute) deprivation for individual welfare, and thus for the exposure of employees on the labour market.

However, gauges based on social expenditure cannot characterise social security provision nearly so finely as can gauges of social rights. Since means testing is typically associated with a notion of absolute poverty which places very severe strictures on the extent of material benefit available (but see Esping-Andersen, 1996a; b), social expenditure can be expected to express much of the deprivation experienced by those claiming state help. But, as Esping-Andersen (1990) stresses, social expenditure is an epi-phenomenon, expressing imperfectly the social rights which were the aim of welfare reformers. Expenditure does not straightforwardly reflect the typical qualifying criteria and the extent of help available. A variety of considerations drive a wedge between the social rights available to the typical individual and the expenditure devoted to social protection, even



where what may be very costly administration is excluded. These centre around stratification in public welfare provision, the extent of the population dependent on social protection, and the provision of state support in ways which are not apparent in benefit expenditure figures.

The exclusive and socially stratifying nature of some welfare regimes is emphasised by some scholars. Public employment has often, as in Germany under Bismarck and in Austria under Von Taaffe, involved highly selective recruitment allied to a conferment of privilege aimed at the incorporation of civil servants into an elite governing group with a distinct identity (Esping-Andersen, 1990; 1992). Social expenditure may be directed with a thrust far from egalitarian, with an intense devotion of resources to the benefit of a select few with the deliberate intention of the establishment of special status – there may thus be what Esping-Andersen (1990) terms an ‘etatist bias’ in social provision. Esping-Andersen (1990; 1992) stresses the extent of public social expenditure on the pay and benefits of a relatively small group of privileged public employees in France, Italy, Germany and Austria particularly.

The ILO (1996, Tab 7) provides some fragmentary indication of the comparative extent of the privilege of civil servants, presenting some figures on the proportion of benefit expenditure devoted to public employees. In general, there seem profound problems of data comparability, with the likelihood that some countries’ responsible bodies submitted data relating to all expenditures on public employees’ benefits and others submitted data relating to additional benefits above and beyond those available universally. Nonetheless, in a number of cases the data do allow some meaningful comparisons, as it is clear that they relate to all benefit expenditure on civil servants. Expenditure on public employees’ (cash and in-kind) benefits accounted for 19% of Austrian benefit expenditure, this having declined a little from over 20% in the 1970s. These comparatively large proportions accord with Esping-Andersen’s (1990) suggestion that Austrian civil servants enjoy a unique degree



of privilege, comparing with the 13-15% of the comparatively exceptionally small benefit expenditures of the US and Japan which went to public employees in this period. In Finland and Sweden public employees are covered by the universal social insurance security scheme. Despite their well developed welfare states, in 1980, for example, spending on their benefits accounted for only 8% of benefit expenditure in Sweden, and for 14% in Finland. Some cross-national variation in the extent of civil servant privilege is thus apparent. Nations' welfare states embody social stratification to varying degrees. Gauges of welfare provision relying on total social expenditure miss this completely.

Other authors stress the inability of expenditure measures to make allowance for the extent of the population supported by public social protection efforts. Korpi (1983) stresses the assumption implicit in expenditure based measures of welfare provision that a nation spending more on unemployment benefit has a better developed social policy, so that an experience of mass unemployment may give a misleading impression that a nation affords generous social protection provision. Esping-Andersen (1990) highlights the relevance of this to the British experience of the 1980s. The argument carries rather less weight than might be expected, however.

Writing before the experience of mass unemployment became common in the advanced industrialised societies, Wilensky (1975, 2-3) noted the domination of social expenditures by spending on three broad programmes, those centred around pensions, health and family allowances. In the period before the oil shocks of the 1970s unemployment compensation, along with work injury compensation and various forms of public or social assistance, involved relatively little expenditure. This situation changed rather little in the wake of the crisis years. Pampel & Williamson (1988) conclude that since in the post-war period unemployment benefits have typically accounted for only 5% of all social expenditure, with the rate of unemployment having strictly limited implications for total



social spending. Esping-Andersen (1996b) notes that in 1992, passive unemployment compensation absorbed only 2% of continental European GDP, although noting that much functionally equivalent Italian expenditure was masked as pension or CIG spending. The evidence for Finland is particularly interesting, given the catastrophic levels of open unemployment recorded there in the early-mid 1990s. At a time when Finland experienced a standardised unemployment rate approaching 20% of the registered labour force and offered comparatively generous unemployment compensation, Statistics Finland data showed that expenditure on unemployment benefit accounted for no more than 15% of all social expenditure (SAK, 1998, Table 10.8). Whilst this represented a rise of 10% points on the proportion of Finnish social expenditure accounted for by unemployment compensation in the late 1980s, when the rate of unemployment was still below 5%, the 15% share of the early 1990s can only be taken as demonstrating the limited import of the extent of unemployment for total social expenditures.

Korpi (1983) also discusses the significance of the numbers over 65 for pension spending, acknowledging the partial dependence of total welfare expenditures on demographic features of nations. The numbers of demographic dependents do vary by country, with Japan for example featuring an exceptional number of the very old people – those aged over 80 – who tend to be most demanding of resources (Esping-Andersen, 1996a). This is not to say that welfare provision is simply driven by the numbers in the aged population, however. The intensifying bias of continental European welfare provision on the aged contrasts strikingly with the Nordic tendency (Esping-Andersen, 1996b). The proportion aged seems of substantial relevance to welfare expenditure in only those countries where social provision in general is rather limited, not much beyond a level which may be a minimum functional requirement of modern capitalism. Stephens (1979) stresses



the absence of any general cross-country relation between social security effort and the proportion of the population aged.

Nevertheless, as Pampel & Williamson (1988) and Hicks & Swank (1992) show, the proportion of the population over 65 years old is statistically associated with comparative historical welfare effort. In the present context, any potential distortion in the depiction of welfare states by expenditure measures resulting from variations in the extent of the most vulnerable population covered by public expenditures can be attenuated by consideration of the proportion of the population who are aged. The demographic indicator, readily available from OECD sources (e.g. 1996a), expresses the intensity of workers' need to finance their family's retirements from the social expenditure laid out by the state, and thus refines the characterisation of the exposure of those of working age.

Expenditure based characterisations of welfare efforts do risk the mis-representation of the vulnerability of individuals where social rights are assured by means other than public expenditure, or by expenditures which are not apparent in conventional gauges of state welfare spending. Functionally equivalent social security provision may be missed. This problem is evident in the statistical treatment of housing policy. The fragmentary nature of the data available on housing policy expenditures means that spending on such programmes is typically excluded from consideration in measures of welfare effort, whilst policy programmes of rent control are necessarily neglected in any expenditure measure of social provision. However, there is some evidence to suggest that there has historically been a moderately strong relation between social spending as conventionally conceived and housing expenditures, and indeed the impact of broader housing policy initiatives (Wilensky, 1975, 7-8).

There is a related risk that social protection under less familiar societal systems may be misconstrued in conventional social expenditure statistics. Given the Western focus of this



study, there might be thought a particular danger that social provision in Japan be misrepresented by expenditure measures of welfare effort. Indeed, the universal rights to health care established in the early 1980s in Japan are missed by data on public expenditures. Japanese health care provision is administered by public agencies, which collect the insurance premiums, with the state serving as a regulator rather than a direct provider of health services (Goodman & Peng, 1996, 207). The precise character of these agencies does remain equivocal, however, on the critical issue of the provision they provide regardless of individuals' incomes – they may offer a service more akin to private insurance than social insurance or protection.

In another core area of welfare provision, it seems clear that Japan does not offer any more than is typical in Anglo-Saxon countries. Takezawa et al (1982) argue that the Annuity Law of 1973, offering pension coverage for most of those employed in the private sector, constituted a major advance, but note that large companies have government regulated supplementary annuity plans, and some have special corporate plans. Under the provisions, the generosity of state pensions was boosted, and indexing instituted, but the 'welfare era' proved short-lived, with efforts to curtail social expenditure in the later 1970s and 1980s supported by the predominant large company unions (Goodman and Peng, 1996, 203). Wilensky & Turner (1987, 13-14) highlight the similarity of the controversy over the pension system in Japan to that in the US, implying that encompassing pension provision is not on the political agenda. More generally, it seems that the tradition of social security in Japan is of residual social provision, with the state fostering the social stigma attached to statutory assistance, and that comparatively little has changed, so that the welfare state remains far from comprehensive and public benefits remain modest (Goodman and Peng, 1996, 202-7; Esping-Andersen, 1996a, 21-23). Private supplements and corporate welfare are still critical. In this context, the comparatively low welfare effort typically recorded for



Japan does not seem profoundly mis-leading as an indication of the extent of the social rights enjoyed by Japanese employees.

Of course, expenditure based measures of welfare cannot of themselves offer a comprehensive impression of a nation's social policy any more than can measures based on social rights to welfare. As Korpi (1989) stresses, the terrain of democratic class struggle may shift to new frontiers, impacting social rights in other spheres which bear in different ways on distributive conflict. Indeed, regardless of the coalition of forces which shapes it, a social policy which reaches deeper into the influences shaping income distribution than does welfare provision may result in lower levels of social expenditure on, for example, unemployment, or indeed health care. Critical dimensions of social policy are missed, and the nature of it mis-represented, if it is conceived solely as welfare provision (Korpi, 1983, 186-190). The role of other aspects of social policy, extending beyond social protection, can be considered through measures of the rate of unemployment, and indeed employment, amongst the population of working age. Where the welfare state is depicted according to social spending, these variables might be considered as further proxies for the extent of the population for which welfare expenditure is absolutely vital.

Nevertheless, welfare effort constitutes a comprehensive measure of societal welfare commitment, encompassing investment in various programmes which may be viewed as functionally equivalent by policy makers (Hicks & Swank, 1992), or indeed treated as such by employees regardless of the intentions of policy makers. Whilst exploring comparative social rights and comparative social expenditure as distinct objects of study, Huber & Stephens (1993) argue that the difference between the gauges of provision is sometimes overstated. In some respects, indeed, it may be that gauges of social expenditure capture something of the insulation afforded individuals by the welfare state which is not registered in indices of social rights.



To the extent that benefits are provided in-kind by the state, or indeed that administration of welfare programmes is required, the public employment involved in welfare states may be of significance of itself. Service based social programmes may not only attenuate the vulnerability of the employed through their delivery of services, but also via the very public employment involved, especially if this is paid at rates comparable to those prevailing in the private sector. Such public sector employment offers an alternative source of income and identity to that offered by private sector employers, not only for individuals but for couples and for families, reducing their exposure to private employers' prerogative. The comparative extent of such public employment varies enormously, with the great comparative variation in the role of service provision in social spending. Currently, expenditure on non-health social services amounts to around one third of that on transfers in Nordic nations, but less than one sixth of this in continental Europe in general, whilst in Italy spending on such service provision amounts to only a fifteenth of that on transfers (Esping-Andersen, 1996b). Significantly, it is thus in the most advanced welfare states that service delivery features dis-proportionately.

The public employment implied by more extensive social security provision, particularly where it is largely service based, may of itself aid in the consolidation of support for social protection. Korpi (1983) argues that public employment in Sweden has aided in the consolidation of support for the social democratic party, SAP. Since public sector health workers have a particular propensity to unionise (e.g. Jefferys, 1995), there is also the possibility that the union movement may be strengthened by service based welfare efforts. However, there seems evidence that a large public service membership of this sort may disrupt the coherence of organised labour (e.g. Glyn, 1995).



### *Welfare provision, generalised political exchange and social rights in the workplace*

The comprehensiveness of the welfare state, as gauged for example by social welfare effort, may be significant not only of itself as an influence on the exposure of employees, but also as an expression of the broader success of organised labour in bringing its industrial muscle to bear in the political arena. The power resources approach to societal development (e.g. Korpi, 1978; 1983; 1989) emphasises the role of working class mobilisation in the shaping of social rights, viewing welfare states, as other institutional arrangements, as in large part a product of the investment of organised labour's power resources. Reluctant governments of a more conservative complexion may concede welfare expansion in response to a demonstration of unions collective capability in sustained industrial action, or merely in recognition of unions latent clout. Alternatively, welfare state development may occur through the participation of social democratic parties in government. Finally, it is argued that it may emerge under more conservative governments fearful of the electorate's attraction to the social democratic parties with which they compete – there may thus be a 'contagion from the left' (see, e.g. Korpi, 1989, 313). The pursuit of political legitimacy and the need to contain industrial action which arises from organised labour's potential for the expression of grievance are thus argued to influence legislatures and executives of whatever complexion.

Several contributions provide evidence that social democratic participation in government effects welfare development, whilst the presence in numbers in the legislature of the political wing of the labour movement also seems to prompt conservative actors and parties to assume social democratic objectives - a 'contagion from the left' based on electoral competition and perhaps also on shifts in the dominant discourse. Korpi (1989) finds the 'contagion' effects on sickness insurance relatively limited compared with those of



social democratic cabinet presence, particularly where this cabinet role is backed by substantial parliamentary presence. Korpi's (1989) findings also suggest that a shift in strategy is apparent across the advanced industrial world around the time of the Second World War. Whilst it is industrial conflict which is of importance pre-war it is union density which matters post-war. This does suggest that unionisation tended to enrich rights to social insurance in the post-war period without being reflected in industrial action - that industrial mobilisation effected social rights without being expressed in industrial conflict in this period, in keeping with his notion of a shift to action in the political arena which is, however, still shaped by labour's potential for industrial unrest. Social democratic theorists stress a strategic shift in Scandinavia and particularly in Sweden from an industrial mobilisation expressed in strike activity to a political mobilisation, pursuing aims in the arena of national politics, is borne out.

The Second World War seems a watershed in the development of welfare states. It is not simply that it somehow facilitated their development (e.g. Stephens, 1979), but that it marked new national trajectories. Esping-Andersen (1990) notes that whilst there is a statistical relation between nations' welfare expenditures in 1977 to that in 1950, there is no such relation between that in 1950 and that in 1933. The comparative influence of labour movements in the post-war period does seem a factor in these various post-war trajectories. Certainly, if social policy is conceived in terms of social rights, and particularly if these social rights are considered to include the right to a decent wage and to employment, labour movement theory adds much to the 'logic of industrialism' perspective, the notion that the development of the welfare state is a natural concomitant of the (capitalist) industrialisation process (e.g. Korpi, 1983; 1989; Esping-Andersen, 1990; 1992; Huber & Stephens, 1993; Huber, Ragin & Stephens, 1993). At the same time, however, there is a real danger of what Michael Shalev termed the 'Swedo-centric fallacy' – the assumption that labour movement



as powerful as the Swedish necessarily implies a generous and encompassing welfare state. The Austrian labour movement is apparently powerful and coherent, yet features a welfare state characterised by patchy universalism, with much public money spent on civil service benefits (Esping-Andersen, 1992).

As Esping-Andersen (1990) argues, the notion that it is working class mobilisation which has forged nations' welfare states is not unproblematic. Critically in the current context, there is the issue of the role of the conditions in which labour movements act, and of the role of other actors. Studies have established the significance for welfare state development of the ideological and institutional heritage in which contemporary political actors are embedded, such that the contemporary political conditions, and the political complexion of the governing coalition, whether predominantly social democratic, centre or conservative, may be of limited immediate significance for welfare spending, and even for the social rights which spending imperfectly reflects (Esping- Andersen, 1992; Hicks and Swank, 1992; Huber & Stephens, 1993). There is evidence in particular that entrenched historic Catholic and patrimonial influence on policy making has nurtured comparative historical development of welfare provision, particularly with regard to sickness benefit arrangements (see Stephens, 1979; Esping-Andersen, 1992; Hicks and Swank, 1992). Esping-Andersen (1990) stresses the importance of cross-class coalitions, and of weakness and division on the right of the political spectrum, to welfare state development. He stresses particularly the early importance of red-green alliances between social democrats and farmers' parties, and, later, coalitions between blue and white collar employees. Social democratic theorists have, perhaps surprisingly, gone as far as to suggest that the rural classes were critical for the progress of democratic socialism (Esping-Andersen & Korpi, 1984; Esping-Andersen, 1990).



Recent quantitative work comparing the comparative historical correlates of social rights to welfare and those of welfare effort has shown that the weight of Catholic Christian democracy in nations' executives is more closely associated with welfare expenditures, and most particularly transfer expenditures, than it is with the quality of social rights to welfare (Huber & Stephens, 1993; Huber, Ragin & Stephens, 1993). Huber & Stephens (1993) suggest that Christian democracy matters more for expenditure than for social rights because Christian democracy tends to be associated with stratified 'corporatist' provision, targeted political patronage, early retirement programmes and a costly administrative fragmentation. Correspondingly, these recent contributions find that the social democratic incumbency in the executive is more closely related to social rights than to social expenditure, particularly where attention is limited to expenditure on transfers. This work provides a further specific indication that gauges of welfare effort do not simply express the play of social democratic ideas, but has a substance of its own.

To some extent, though, welfare effort may be a manifestation of the broader political influence of the agenda of organised labour, an agenda spanning other arenas of state action, and influence in peak level collective bargaining sponsored by the state. Welfare effort may thus indicate something of the success of labour movements in effecting, or forging coalitions which effected, a more broadly felt influence on state activity through the generalised political exchange highlighted by Pizzorno (1978). In so far as labour movements have successfully pursued welfare state development alongside agreements on hours, labour law reform, and state support for workplace development, welfare expenditures may capture something of state initiatives to humanise work, efforts which are not in themselves readily quantified. German unions famously pursued such a strategy under the programme of *Konzertierte Aktion* from the late 1960s (e.g. Jacobi et al, 1992). The contemporary Finnish concertation seems a further excellent example of the simultaneous



pursuit by labour movements of social and industrial reform, achieved alongside state sponsored peak level wage negotiations which even the principal union confederation involved terms an incomes policy (Kauppinen, 1992; SAK, 1998). These cases seem the more obvious instances of a broader phenomena. The British experience of political exchange under the Social Contract was exceptional not only for the very limited duration of tripartite consultation on economic, industrial and social policy, but also for the unions comparative lack of interest in using concertation to forge collective agreements bearing on working hours and in legislative attempts to reform workplace practice. Even in Britain, however, some statutory provision for representative participation was made in the 1970s, with the HASAWA and the SRSC provisions (Nichols, 1997).

As a central outcome of generalised political exchange between labour movements, their allies and the state, welfare effort does seem likely, in general, to be comparatively associated with policy initiatives extending social rights in the workplace. With regard to this issue of the association between the development of social rights to welfare and those in other arenas, the renowned alliance between the Swedish manual workers confederation, LO, and the non-manual confederation, TCO, forged through the pension reform of 1959 and apparently central to efforts to advance industrial democracy in the 1970s, seems particularly interesting. These observations on the Swedish case suggest that the pursuit of social rights to welfare may precede historically the pursuit of social rights to workplace participation. This is precisely what is implied by Stephens' (1979) identification of labour movements' shift from a concern with consumption politics to a focus on production politics. Korpi's (1983) notion of a shifting terrain of struggle is consistent with such a possibility.

There is indeed a corresponding possibility that social expenditure may not simply express generalised political exchange but, of itself, serve to buttress it, as the collective



identity of wage and salary earners is underwritten by the integration of a desperate 'underclass', or 'lumpenproletariat', in the manner suggested by Esping-Andersen (1990). Social protection may thus serve to underwrite an inclusive solidarity, based on an intra-class redistribution which has sometimes been parodied as 'socialism in one class' (see Goldthorpe, 1984; Lane, 1989), which inhibits the penetration of the ideology of individual responsibility and nurtures interest in the development of social rights in spheres other than welfare. Moreover, as several authors argue, employee and union interest in industrial democracy may tend to become more acute as the implications of ceding to employers demands to maintain their prerogative, perhaps under an implicit understanding that the welfare state be advanced, become more apparent over time (e.g. Fulcher, 1991; Franzosi, 1995).

Yet social rights in the workplace need not necessarily lag developments in the welfare state. The example of Sweden, treated in detail by Fulcher (1991) is instructive considered in more depth. Initiatives in industrial democracy began with the centrally negotiated Works Council Agreement of 1946, an agreement revised by similar peak level collective bargaining in 1966. The statutory erosion of managerial prerogative was an innovation of the 1970s, which saw the 1972 legislation on board representation, the 1974 Employment Protection Act and finally in the 1976 Codetermination Act in which statutory provision for industrial democracy culminated. Peak level negotiations secured the Development Agreement for the implementation of the 1976 legislation only in 1982. Crucially for present purposes, whilst statutory reform was a phenomena of the 1970s, there seems a greater continuity in the pursuit of social rights to industrial democracy than this suggests. Collective bargaining has played a central role in developments in industrial democracy in Sweden. In this context, welfare effort may express something of historical developments in workplace social rights, not only of their cross-national comparative state



over the period of this study as a whole. Whilst it may be the case that statutory provision for industrial democracy was concentrated in the 1970s, this does not necessarily imply the general absence of effective social rights in the preceding years when differences in welfare provision began to develop. Social rights in the workplace may be collectively bargained, and to some extent the statutory reforms of the 1970s may have been validated, and perhaps been enabled by, existing patterns of customary representative participation. The discontinuity between consumption and production politics which Stephens (1979) stresses may be a little overdrawn.

Gauges of welfare effort, the share of social expenditure in national income, can thus contribute to the broader quantitative characterisation of the individual and collective power resources of employees in comparative historical work. Any expenditure based measure purporting to gauge the nature and comprehensiveness of public social protection has conceptual weaknesses (Korpi, 1983; Esping-Andersen, 1990; 1992), but aggregate data on total social expenditure can nevertheless be meaningfully employed. In the context of econometric study the failings of aggregate social expenditure as a gauge of social provision do not seem critical. There seem good grounds for arguing that such measures pick up something at least of social rights which is not captured by union density through the comparative historical associations of welfare effort with encompassing, comprehensive and generous welfare state provision. Moreover, as has been discussed at some length here, it seems that social protection expenditure may pick up something of the presence of the play of social democratic ideas in a more generalised political exchange, and of the implications of this exchange for social rights in the workplace. There seems some basis for treating welfare effort not solely as an indicator of the individual exposure of employees before their employers, but in part as an expression of the play of social democratic ideas more broadly, and thus of social rights in the workplace. Whilst it seems likely that the cross-national



comparative association between welfare effort and specific provision for industrial democracy over the period 1960-95 in its entirety is closer than the historical association between welfare effort and such workplace social rights, there are considerations even in support of the latter. The construction of series for social welfare effort, from ILO and OECD sources, is detailed in the appendix.

### **Migrant workers**

The significance of migrant labour is little discussed in economics, nor indeed in the employment and industrial relations literatures, even in comparative contributions. The comments on foreign workers in the volume on European industrial relations edited by Ferner & Hyman (1992) for example, tend to be confined to a noting of the limits of their role in representative structures. Strikingly, the seminal work of Wolfgang Streeck (see e.g. 1992) on industrial relations in West Germany makes almost no reference to foreign workers, although this work concerns the experience of a country in which the utilisation of migrant labour was extensive.

Indeed, the bulk of the eleven countries whose experience is explored here have seen substantial migrant labour in the period from 1960. The use of migrant labour is perhaps the most long standing and deeply entrenched in the case of Canada (e.g. Statistics Canada, 1972; 1990). The US too has of course seen substantial immigration throughout the twentieth century, much of it from Mexico (Cohen, 1987). Japan is an exception in amongst the leading industrialised countries in its very limited (recent) immigrant population (Potts, 1990). In the European countries which dominate the terrain of the present study, the pattern of historical development has been more sporadic, with much migration occurring in the post-war period. Through the 1950s, 1960s and into the 1970s there was a massive migration to the more affluent countries of Western Europe from Southern and Eastern



Europe and from the richer countries' remaining and former colonies in North Africa, the Caribbean and south Asia. Most often these population movements were actively encouraged by the host nations as a means of attenuating the difficulties posed by tight labour markets (see, e.g., ILO, 1977, 2).

Amongst the European countries under study here, the major recipients of immigrants were France, West Germany, Austria, Great Britain, and Sweden (ILO, 1984, Table 4.1; Castles & Miller, 1998, Table 4.1). The nationality profile of the new arrivals differed enormously amongst the recipient nations, in large part according to long established diplomatic relationships (see also Eurostat, 1989, Table I/4; III/6). The bulk of the migrants entering France originated in Algeria and Portugal. Those migrating to West Germany were principally from Turkey, Yugoslavia and Italy. Immigrants to Austria originated predominantly in Yugoslavia. Those arriving in Britain were principally from the West Indies, India and Pakistan (see also Cohen, 1987). Migrants entered Sweden principally from neighbouring Finland, but to a lesser extent also from Yugoslavia (see also Nordic Council of Ministers, 1978, Table 13). Whilst some of these immigrants were quickly granted citizenship, in most cases they were not. Most were not naturalised, remaining foreigners in the Western European nations in which they worked.

In the British case the migration started relatively early, but, it seems, was not treated as instrumentally as it was in some other countries. Britain's colonial ties implied that many of those who arrived from developing countries had ready access to the full political and social rights of citizenship, particularly in the earlier years spanned by the current study (e.g. Cohen, 1987, 126; Layton-Henry, 1990, 14-16). The Commonwealth Immigrants Act of 1962, which required immigrants from the 'new' Commonwealth, defined essentially as the predominantly black nations, to hold an employment offer, began a rapid process of erosion of the rights of colonial and Commonwealth citizens to full British citizenship (Cohen, 1987.



161-2). However, it does seem, as Goldthorpe (1984, 342 n7) claims, that, at least until the passing of the 1971 Immigration Act, the British case was exceptional in the comparatively limited emphasis put by state officials on the recruitment of migrants for purely economic reasons. Whilst the gradual curtailment of immigration certainly implied a more instrumental approach, the bulk of the immigrants who came in to Britain from the 1950s were not regarded simply as solutions to perceived labour market difficulties.

Despite French colonial ties, and indeed extensive naturalization to full French citizenship, France has long had an extensive population with foreign citizenship, such that in the 1950s it had by far the largest such population in Western Europe. Immigration to West Germany took off from the early 1960s, and naturalisation was limited. By the close of the decade West Germany and France together boasted the greatest proportions of foreign citizens in their population. Despite the extensive immigration to Sweden, particularly in the 1960s, a comparatively generous approach to new arrivals meant that the country featured a lower proportion of non-naturalised migrants in its population than any of the major recipients but Britain (Layton-Henry, 1990, 2-3 & Table 1; Castles & Miller, 1998, Tables 4.2 & 9.2).

Migrant workers have historically been clustered in certain industries and occupational roles. Eurostat (1989, Table III/8) presents a breakdown of the dependent employment of foreign nationals by NACE division for the period 1980-7. Comparison of the proportion of foreign manufacturing workers employed in metal manufacturing to this proportion amongst all manufacturing employees shows that foreign workers in France and West Germany have historically been employed disproportionately in the heavier branches of manufacturing industry.<sup>lv</sup> Interestingly, in contrast to the situation in France and West Germany, foreign workers in the UK were employed slightly disproportionately in lighter manufacturing.



Eurostat (1973) demonstrates the extent of the employment of foreign workers in the iron and steel industries of French and West German manufacturing in the early years spanned by the present study. The statistics, carefully collated for the European Coal and Steel Community studies of the industry, show that in the 1960s migrants constituted more than 25% of the industry's workforce in France, and in West Germany a proportion which grew rapidly from almost nothing to almost 15% by 1970. The historic preponderance of foreign workers in the European auto industry, and particularly in the labour intensive final assembly, is well known. Migrants have featured heavily not only in the auto industries of France and West Germany (Nichols, 1986; Cohen, 1987), but in the car, truck and bus plants of smaller countries such as the Netherlands and Sweden (Berggren, 1994). Fragmentary evidence on their significance in other manufacturing industries confirms their substantial role. Palm (1977, 7) notes that in the early 1970s 40% of the workers at LM Ericsson's telecommunications factories in Sweden were migrants.

Wrench (1995) stresses the concentration of immigrant and ethnic minority workers in the least favoured and most hazardous jobs, citing a wealth of evidence from the USA, the UK, Australia and Sweden. The experience of migrant and ethnic or linguistic minority workers in Sweden is of particular interest in the light of the comparatively determined efforts made to integrate the immigrants, mostly from Finland, into Swedish society. Korpi (1978) comments on the relatively poor working conditions and job characteristics experienced by migrants in Sweden, despite such efforts. He does however note their relatively good earnings, at least within the metalworking industry. Knocke (1991) documents the relatively poor situation of immigrant women in Swedish industry more generally.

Goldthorpe (1984) emphasises the distinctiveness of the migrant workforce. Foreign national employees have almost always worked under temporary contracts subject to annual



or bi-annual renewal, have often been tied to the particular domestic employers which recruited them, generally been denied suffrage and other political rights, often faced very severe difficulties in claiming social security if they lose their job, and been poorly incorporated into established union channels of influence than are the foreign born in general (Goldthorpe, 1984, 330-1; Grunberg, 1986; Cohen, 1986). Grunberg (1986) stresses the significance of the changes instituted by the French Socialist government from 1980, granting immigrants full rights of association, protecting the majority from expulsion, and easing the restrictions on changing employers. These, still limited, reforms are notable for their singularity. In general, foreign nationals have been peculiarly vulnerable to managerial authority in the host company to which they are tied, and their tractability and apparent instrumental orientation to work should be considered in this light (see Korpi 1978; Nichols, 1986).

Goldthorpe (1984) discusses Kindleberger's argument that the presence of a foreign and precariously situated segment necessarily undermines the position of indigenous labour. The absolute exposure of foreign nationals to managerial prerogative may be used by employers to undermine the bargaining position of nationals. Despite the neglect of the role of foreign labour in the work collected in Streeck (1992), Schmitter and Streeck (1991) argue that the ethnic heterogeneity of the German workforce *has* facilitated the ongoing effective decentralisation of joint regulation in Germany, by impairing the cohesion of the German union movement. Such an undermining of collective identity and solidarity is also suggested by Korpi's (1978) work on Swedish metal working, although Korpi stresses too the workforce stratification implied by the presence of a more vulnerable group. In the same spirit, whilst Regini (1992) admits the possibility that the presence of a migrant group may undermine the solidarity of workers, he suggests that the presence of migrants may also facilitate the maintenance or development of the rights and conditions of indigenous labour.



To the extent that foreign workers are used to fill extant job roles which employers would like to see filled but nationals are disinclined to do (see e.g. Cohen, 1987, 127), a division between the indigenous, or naturalised, and alien population is already apparent. The presence of alien workers may thus be seen as a counterpart of, and thus an expression of, the success of the indigenous workforce in securing social rights and developing their organisational muscle (see Goldthorpe, 1984), perhaps constituting a 'structural necessity' in this context (Cohen, 1987, 135). The boundaries of worker solidarity are thus already drawn in such a way as to exclude alien workers, and a dualism nurtured which can allow nationals to escape the worst sort of work. The racism of indigenous union members has played no small role in the entrenchment of the dualism (see Cohen, 1987, 129-30).

In the context of divisions between the indigenous and the alien elements of the workforce, there is indeed space not only for the exploitation of aliens by employers, and for a broader undermining of the position of the remaining workforce by the presence of a particularly vulnerable minority, but for the indigenous workforce to improve some aspects of their working conditions at the expense of the alien labour force in an unholy alliance with employers. Working conditions for the indigenous employee may be improved in ways which would not be tolerated by employers if they did not have a more vulnerable migrant workforce on whom to depend for the worst sorts of work. The extent of the migrant workforce may indicate to some extent the preparedness of unions and labour movements to accept the demands by employers for a more vulnerable component of the working population in the context of an ongoing development of the position of indigenous labour. It may express, at once, employers' dissatisfaction with the advances of domestic labour but also unions' acceptance of a dualism in the situation of the employed.

This is not to say that the presence of alien workers cannot have contradictory or perverse effects as its actual implications are played out, regardless of the intentions of



indigenous labour representatives. Migrants have not always passively accommodated to their situation; foreign workers took a substantial role in many countries in the militancy of the late 1960s and early 1970s (Regini, 1992). More generally, the bolstering of the exposed labour force segment in the domestic political economy may have beneficial or deleterious implications for the indigenous labour force, regardless of the intentions of the actors who facilitated their introduction.

Various approaches may be taken in portraying the extent of foreign labour in a nation's industry. In general, there is a deal of comparative association between the proportion of a nation's workforce which is foreign born and the proportion who are non-naturalised. However, as suggested above, the UK represents an example of a country which has historically ranked quite differently on these accounts. Moreover, figures on the numbers satisfying a particular administrative criteria may be quite misleading, not necessarily corresponding with the cross-national comparative intensity of individuals' vulnerability. The quantitative nature of the current empirical work, particularly in the context of the profound data difficulties experienced, necessitated a judgement about the likely relative significance of various distinctions around migration, citizenship and ethnicity.

Goldthorpe (1984, 331) suggests that the centrality of civil, political and social rights implies that the critical distinction in workforce composition is not that based on country of birth, or ethnicity, but on citizenship. This is not to deny a *de facto* differentiation of experience of naturalised immigrants and minorities, in large part based on the ambivalence of established unions to them (see also Wrench, 1995; 1997). Cultural and racial misunderstandings and tensions between ethnic majorities and minorities do represent obstacles to understanding and solidarity in the workplace, and indeed more broadly. There seem for example *de facto* differences in access to social provision (Cohen, 1987). But the



non-naturalised foreign labour force are not simply foreign born, not simply descended from those migrating within living memory, but foreign born people who are not accorded the formal rights of citizenship. It is the non-naturalised foreign workforce who are most subject to the whip of the market, whose vulnerability is most intense. They are 'aliens' in the countries which host them; the striking UN term captures the status historically accorded them in the countries in which they have worked.

Whilst it is extremely problematic to gauge the vulnerability of aliens in a particular country and at a particular time relative to the vulnerability of nationals, one can at least gauge with reasonable accuracy the comparative extent of the non-citizen population and workforce (see Layton-Henry, 1990, 14-16). It is perhaps the case that the exposure of aliens has been more uniformly intense than that of migrants in general. In the context of the substantial historical commonalities in the nature of the situation of alien workers apparent across advanced industrial societies the proportion of aliens in the workforce can give some sort of indication of the extent of the presence of a segment of the workforce with a heightened vulnerability to managerial prerogative. Even gauging the extent of the foreign labour force is not without difficulty however. In the cases of many countries the derivation of series for the proportion of the labour force who are of foreign citizenship requires more than the careful use of a number of studies of migration, it requires also a good deal of estimation. The construction of the series for alien presence is detailed in the appendix.

There are of course other political economic indicators which it might be thought are likely to be related to developments in the humanization of work. The bulk of these are indicators frequently referred to as 'economic', and often cited in economics literatures. Some, however, have been the subject of less attention, at least within the neo-classical programme. Most may be interpreted in a number of alternative ways. The intricate details of data construction are given in the appendix.



## **Profitability.**

The role of profit in the political economy of labour has been the subject of some attention in economics. In the labour economics literature, substantial evidence that greater profitability is associated with higher wages in the UK is presented by Hildreth and Oswald (1997), with similar evidence for the US in Blanchflower, Oswald and Sanfey (1996). Papers such as Machin, Stewart & Van Reenan (1993) have sought to explore the relationship between unionism and profitability in Anglo-Saxon countries, suggesting that there is a tension between them. These studies all employ relatively disaggregated statistics, bearing on particular branches of industry or more often companies or establishments.

There has been relatively little attention to the significance of profitability, the share of profit in value added, at an aggregate level for the political economy of labour. In the monopoly capital tradition, Cowling (1982), stresses the difficulties organised labour has in raising the share of wages in value added. In a rather different tradition, Glyn & Sutcliffe (1972) argue that British union militancy squeezed profitability increasingly through the 1960s and into the early 1970s, threatening the accumulation of capital. Conyon (1991) demonstrates econometrically the historical relationship between union density and aggregate profit share for the UK. Glyn's subsequent (e.g. 1997) explorations of the comparative historical relationship between investment and profitability in OECD nations has involved the most intensive effort to collate comparable series for the share of profits in the value added of manufacturing. These figures show that profitability in the manufacturing sector has shown massive variation across countries and, since at least the late 1960s, great fluctuation over time.



For all these authors, profitability is in part an indicator of conditions in the product market. There seem a number of avenues through which profitability may have some relation with work humanization. Levels of, and indeed changes in, profit might be thought likely to have implications for the legitimacy of companies' operations. Where employees feel that their employers' profits are excessive, they may be more likely to express discontentment with the employment deal and demand improvements in their working conditions. To the extent that employers' aspirations with regard to profit are founded on a basis similar to that on which employees' assess what is reasonable, employers' may also feel more inclined to make concessions in such circumstances.

Moreover, profitability might be thought of as critical to the space for action enjoyed by employers, and thus to their consideration of the possibilities of work humanization. Perhaps relatedly, where profitability is higher, or unusually buoyant, employers' may have a heightened desire to avoid employee discontent, and possible industrial action, thus hearing demands for improvements in working conditions more sympathetically. Indeed, it might be thought that high or increasing profits might have semi-permanent effects, with retrenchments difficult for employers to legitimise.

However, it may also be the case that profitability is principally an indication of the relative strength of the position of capital, as is suggested in differing ways by Glyn & Sutcliffe (1972), Cowling (1982) and Glyn (1997). In this context there may be an empirical tension between profitability and work humanization.

### **The rate of accumulation in manufacturing.**

Investment in new plant and machinery may be related to working conditions in a number of ways. Nichols (1997) suggests in his discussion of British injury experience that



investment may attenuate the intensity of work, with benign implications, citing some evidence to this effect. Relatedly, innovations in plant may present possibilities with regard to work organisation and working conditions, whether these are foreseen or not (see e.g. Berggren, 1994). There are quite different possibilities, however. It is also conceivable that the introduction of new plant could itself cause various difficulties with deleterious implications for working conditions. The rate of accumulation may also be statistically related to working conditions by the relation of the former to profitability and demand conditions (see Glyn, 1997). Finally, there is of course the possibility that working conditions might themselves influence investment, with better working conditions discouraging employers' investment in the manner a neo-classical economist might readily assume (see e.g. Booth, 1995), or encouraging the development of the plant in the manner suggested by Nolan and Walsh (1995).

### **Product market pressure.**

Demand conditions in the product market, the pressure of orders, may have important implications for the workplace employment relationship, and particularly for working conditions. The presence of a greater demand for a company's products might encourage employers to concede better conditions to dis-satisfied employees. It may also, however, result in longer hours and in greater work intensity, and perhaps thus in more injury (see Nichols, 1997). Unfortunately, the measurement of the intensity of the demand for the products of a nation's manufacturing sector is problematic. Series for capacity utilisation in manufacturing have only been constructed for a limited span of years for a limited number of countries (see Artus, 1987). The indicator deployed here is a gauge of the growth in the volume of domestic demand.



## **Open unemployment.**

Since World War II, employment performance has tended to be a major concern of governments in advanced capitalist countries. The influential core social democratic objective of 'full employment', stressed for example by Glyn (1995), has tended to encourage an academic focus on the rate of open unemployment. This emphasis was most usually associated with a view that it was the employment of the male bread winner which was of real importance (Esping-Andersen, 1999). From the years of crisis of the mid-1970s and through the 1980s and into the early 1990s, treatments of aggregate employment performance, or of aggregate labour market conditions, centred on the rate of unemployment. Therborn (1986) was seminal in political science and Layard, Nickell & Jackman (1991) a pinnacle in this regard within economics.

The partiality of a characterisation of employment outcomes based only on the relative extent of unemployment is emphasised in the collection on social corporatism edited by Pekkarinen et al (1992), who draw attention to the broad issue of the importance of the nature of the employment on offer. Ginsburg et al (1997) stress the particular inadequacy of depictions of employment performance referring only to open unemployment. As such contributions show, actual unemployment may be disguised by involuntary part-time working and by the exit of 'discouraged workers' from the active labour force, whether into crime, dependence on their families, or dependence on social sickness or incapacity benefits. Although the inadequacy of even standardised rates of unemployment as gauges of the extent of joblessness is increasingly stressed, even in OECD work (eg. OECD, 1994), such rates remain for many commentators the key indicator of the state of employment conditions.



Certainly, as Korpi (1978; 1983) and Gordon (1996) in their different ways stress, the relative extent of open unemployment is of potential relevance to the exposure of the workforce to managerial prerogative. Rates of open unemployment can capture something of the vulnerability of those actually employed. For the purposes of the present study, gauges of the rate of open unemployment were collated annually for the period 1960-95 from international sources. In principle, the standardised rates thus collated should relate closely to the ILO notion of open unemployment, relating to the proportion of the (active) civilian labour force which is unemployed, available for work, and has actively sought work in the previous few weeks.

### **The employment rate.**

In the light of the inadequacies of even standardised measures of the rate of unemployment as gauges of the employment performance of nations, series for the rate of employment amongst the population of age 16-64 were collated from international sources. Employment rates implicitly refer not only to open unemployment but to labour force participation, constituting a more comprehensive gauge of employment performance. This is not to suggest that employment rates are necessarily a superior measure of the availability of jobs. It is possible that variations in employment rates reflect to a substantial degree differences in the desire of the citizens of nations to engage in paid work.

Thus, differences in labour market participation picked up by employment rates but set aside in measures of open unemployment may simply reflect, to some extent at least, the relative desire of women to work in societies with very different cultures. Such a case, that differences in employment rates simply reflect cultural distinctiveness, is easier to make in cross-national comparative terms, as it seems less reasonable to suppose that movements in culture can account for the historical development of labour force participation in a



particular nation. Even in a cross-national comparative context, however, the cultural explanation is not unproblematic. The relatively limited labour force participation of women in nations' with a strong Catholic current which is often noted (e.g. Esping-Andersen, 1999) may reflect more an absence of employment opportunities for women in these societies than any absolute preference of women in such cultural contexts to play the role of the homemaker. At minimum, in comparative historical work such as this, employment rates can serve as a useful complement to unemployment rates in the characterisation of the availability of jobs.

### **Openness to trade**

Cross-border trade is often cited as an aspect of the process of globalisation (e.g. Edwards & Elger, 1999; Glyn & Sutcliffe, 1999). It is viewed by many as representing one of the pressures constraining the potency of nationally based actors (e.g. Crouch & Streeck, 1997a; Scharpf, 1999). It might be imagined that greater trade could undermine work humanization. In an effort to capture the essence of this force, series for the openness to trade; the share of imports plus exports in GDP, were derived.

### **Conclusion**

Though it is necessarily crude and partial, a quantitative characterisation of the shape of the political economy can thus be constructed. There has been particular attention lavished here on discussion of the interpretation of the indicators of the power resources of labour, collective and individual, derived. Whilst uncertainties of meaning remain, the



foundations have thus been laid for the exploration of statistical relationships between the shape of the political economy and the development of work humanization.



## **8. The political, the economic, and fatal injury incidence.**

This chapter employs the quantitative indicators of the shape of the political economy discussed in the previous chapter to explore the societal conditions associated with comparative fatal injury incidence in manufacturing. The panel econometric study reveals particularly striking statistical relationships between the gauges of the power resources of labour and comparative fatal injury experience. A fascinating relation between fatal injury incidence and profitability is also apparent. The enduring relevance of the unmeasured characteristics of nations is also considered.

### **Influences on injury incidence**

Research conducted in the mainstream of economics with the aim of identifying the determinants of injury incidence has been organised, perhaps unsurprisingly (see Nichols, 1997), by a focus on the choice of the individual employee with regard to matters of health and safety. This neo-classical approach is usually traced to Walter Oi (1974). Given a particular technological, organisational and national context which is not itself subject to any analysis, employees are viewed as facing a well defined and well understood trade-off between safety and earnings and, trivially, optimally, selecting a peril-income combination according to their innate preferences. Wage differentials of the type identified by Adam Smith (1776, Book 1, Chapter 10) in his argument that wages tend to be such as to compensate for the ‘hardship’ and ‘disagreeableness’ of the work are thus held to offset any variation in injury experience. The approach implies that the value which employees put on their limbs and their lives can in principle be inferred from the parameters estimated in



equations for injury incidence featuring wages, although various technical difficulties are admitted (see e.g. Viscusi, 1993).

As Adnett & Dawson (1998) stress in a critical recent contribution to this debate, economic analysis of injury has thus been very narrowly focused, seeking to identify the compensating wage differential rather than undertaking an exploration of the influences shaping injury experience. The broader context of employment relations, including macroeconomic conditions and institutional structures, has been largely ignored. The literature has turned up quite contradictory results, with Adnett & Dawson's (1998) failure to coax out a positive relation between injuries and wages, even with a number of control variables in their regression, unexceptional even in that work reaching publication. In this context, what Adnett & Dawson (1998) characterise as an 'ad hoc' approach, i.e. one not driven by the orientation and theoretical priors nurtured by an exclusive training in neo-classical economics, seems all the more attractive.

The OECD (1989), in a review of trends in the international injury experience since World War II centring around the injury statistics available from national agencies, flag the role of 'technological change' in the reductions in injury incidence often apparent. The substance of this technological change is not substantiated, however. In the manufacturing context, allusion is made to a supposed extension of autonomy at work and an amelioration of the heaviest and most awkward physical tasks and thus to the attenuation of the worker fatigue which can lengthen reaction times and result in injury. Perhaps more interestingly, in its treatment of the experience in the earliest years spanned by the review the OECD points to the intense productive activity of the reconstruction in the aftermath of the Second World War in explaining the plateaus of injury incidence reached in the late 1950s and early 1960s in a number of nations. The OECD (1989) also notes the introduction of statutory health and



safety regulation in many nations in the 1970s, locating this as an aspect of broader contemporary efforts to humanize work.

Some more sophisticated quantitative treatments of the influences shaping occupational injury experience can be found in the work of sociologists. Grunberg's (1986) comparative assessment of workplace developments at the Peugeot plants at Ryton in the UK and at Poissy in France features a commentary on injury incidence. Though he expresses doubts about the consistency of the company injury statistics he draws on across the plants, and indeed over time, his general emphasis on the significance of the broad political economy for workplace developments is richly suggestive.

In the UK at least, however, it is Theo Nichols' research (1989a; 1989b; 1990; 1991; 1994; 1997) which dominates the quantitative sociological literature on occupational injury. As has already been noted, Nichols (e.g. 1990; 1997), in this at least in agreement with the OECD (1989), stresses the difficulties of cross-national comparative research on injury incidence, and thus focuses his attention on the experience of the UK. His quantitative studies of the British industrial safety experience have become increasingly technically sophisticated over the many years he has devoted to statistical work in the area.

Nichols' earliest attempt to use econometric analysis to shed light on the influences on injury incidence deals with fatal injuries in British manufacturing as a whole (Nichols, 1990). Nichols seeks to explore the relevance of the adequacy of plant, the fatigue brought by long hours of work and the inexperience of new hires to the sectoral fatality experience. He finds that over time fatality incidence is inversely related to manufacturing investment, and positively associated with weekly hours of work and the engagement rate in manufacturing.

It is unclear, however, whether these statistical relationships express anything more than strong trends in the four variables employed in the statistical analysis. Fatality



incidence shows a marked tendency to decline in the period with which Nichols deals, as he shows. The absolute value of real investment in manufacturing tends to increase in this same period, despite its violent year to year movements (see e.g. OECD, 1984; 1997). Moreover, weekly hours of work in the UK show a tendency to decline, though slight by international standards (e.g. Blyton, 1989), whilst it seems likely that the engagement rate is similarly trended, as is indicated by the collinearity between these two variables noted by Nichols (1990). In this context, it is unclear whether the statistical relations revealed by Nichols econometrics cast any light on the influences shaping manufacturing fatalities, as similar relations seem likely between fatal injury incidence and *any* other strongly trended series.

Nichols' (1991) later work on the historical pattern of fatal injury incidence in the British manufacturing sector presents much more convincing evidence of relations between fatality incidence, production demands and the adequacy of plant. In particular, he shows that the year on year change in fatality incidence is closely related to a crude proxy of the intensity of labour in manufacturing, constructed by subtracting lagged manufacturing investment from current manufacturing output growth.

In his most recent econometric work on the UK, completed with co-workers, Nichols employs Workplace Industrial Relations Survey (WIRS) statistics to explore cross-sectionally the influences shaping major injury incidence in manufacturing at establishment level (Nichols et al, 1995). The focus of the study is the relation between establishment size, gauged by the number of employees employed, and major injury incidence. Whilst many authors have commented on the superior industrial safety performance of smaller establishments apparent from statistics on all recorded injury, it seems likely that this is an artefact of the lower propensity to report minor injuries in the smaller plants.

Nichols et al (1995) shows econometrically that the *inverse* relation between establishment size and major injury incidence apparent from HSE work and in the WIRS is



not an expression simply of a relation between injuries and age of establishment, the proportion of manual workers in the establishment or the extent of plant level union organisation. They suggest that the relation may be an expression of the different nature of the production tasks performed in smaller establishments, whether as a result of the contracting out by larger concerns of the most unpleasant tasks or because smaller plants are involved in more innovative products. As they stress, it may also express the absence of the organisational resources to devote to health and safety matters, in the context of a more pressing production imperative.

Whilst they are not discussed at length, Nichols et al's (1995) findings that employees in more recently completed plants suffer more injuries, that there is greater incidence in establishments with a greater relative preponderance of manual workers and that injuries are more common in plants with greater union density are all of interest in their own right. They interpret the latter relation as evidence of the greater desire for representation where working conditions are poorer. Nichols et al's (1995) finding, from their industry dummies, that major injury incidence is lower, to a statistically significant extent, in leather manufacture, is also of interest, as is the finding that textile manufacture does not tend to feature a lower incidence.

Fairris (1998) presents a study of injury rates in US manufacturing over the period 1946-1970. The focus on the frequency rate, per million hours worked, of all reported work injuries resulting in absence from work invites profound scepticism, even though the analysis is deliberately truncated before the innovations in government regulation of health and safety in the 1970s. His econometric findings, treating the manufacturing sector in its entirety, that injury incidence is greater when unemployment is lower ('pro-cyclical'), greater during periods when there are more engagements, and greater when there is a greater proportion of young workers in the workforce, are of some interest. Fairris' (1998)



discussion is more stimulating, however, suggesting that his evidence of a U-shaped pattern of injury incidence over the period is shaped for the most part by a shift in the prevailing system of shopfloor governance. He argues that recorded injury incidence bottomed out in the mid-1950s and then began to increase in the early 1960s as the traditional system of unwritten understandings on the shopfloor gave way to a hardened attitude amongst higher management who, amongst other innovations, brought in college graduates to break the established supervisor-worker relationship.

Whilst Nichols (e.g. 1997) expresses profound scepticism about the possibility of cross-national comparative work on injury incidence, he does stress in his work on the UK manufacturing sector the role of the macro environment, and particularly the balance of social forces, to developments. Comparable statistics on fatal injury incidence have been assembled here, with few caveats. This provides a unique opportunity to explore the comparative historical relationship between nations' fatal injury experience and various quantitative indicators of the texture of the national political economy, with a particular focus on the power resources of labour.

### **The panel econometric investigation.**

Multiple regression analysis is used here as a tool for the exploration of the statistical relationships between fatal injury incidence and the indicators of the shape of the political economy. For convenience with regard to the order of magnitude of the coefficients generated by the econometric analysis, the rate of incidence of fatal injury entered into the econometric specifications was expressed per 100000 employed, rather than per 1000 employed as it was for the analysis of the evidence of convergence in nations' fatal injury experience. As Korpi (1989) stresses, the empirical, or event, regularities revealed by the use



of econometrics do not speak for themselves, but rather promise a basis for the interpretation of comparative historical developments.

The 36 annual observations over 1960-1995 available for each of the 11 advanced capitalist countries for which data was collated yield a good sized panel for the purposes of econometric exploration – the data field features 396 observations on each variable. To deal with the problems of spurious relationships which readily arise in estimations involving series which are (locally or globally) time trended, and which seem a particular challenge in panel analysis (e.g. Baltagi, 1995), 35 annual dummies were introduced. This is a simple method with which to cope with the non-stationarity of data which is the focus of time series econometricians, but has the merit of being readily comprehensible. The inclusion of this set of dummy variables implies that the econometric investigation is of the societal characteristics associated with the comparative fatal injury performance of each of the eleven nations in each year of the 36 year period.

This procedure thus accepts that there exists at any time a kind of feasible set of production systems the formation of which is itself left unexplored. This set of feasible production systems may or may not be shaped by the distribution of power resources. Similarly, the procedure implies that the available ‘technologies’ of social regulation may develop over time as well, whilst leaving this unexplored. The effective partitioning of the data field which results from the approach to estimation actually entails a very stringent test of the relevance of the political economy to work humanization.

The panel analysis employs random effects and fixed effects estimators. The pursuit of random effects (and even more fixed effects) estimation, rather than simple OLS on a pooled panel, provides some guard against the potentially distorting influence of any enduring national idiosyncrasies in the statistics on working conditions which remain features of the indicators derived. To some extent then, the econometric results are shielded



from the implications of any societal idiosyncrasies of statistical collation missed in the course of what was a very extensive data collation effort just as the statistical analysis of convergence was so shielded. In the event, the similarity in the results of random and fixed effects estimation provides some re-assurance that remaining idiosyncrasies of this kind are limited, as well as offering some evidence of the validity of the model specification. In this context particularly, the country specific effects produced by fixed effects estimation are of some interest as indications of enduring differences in national political economies which are not expressed by the time varying quantitative indicators of the power resources of labour and other political economic conditions.

The results tables presented below are not intended to be exhaustive in their representation of the econometric results, but rather to indicate their flavour. Since the regressors are regarded here as crude indicators of the broad political economic situation rather than as self-standing potential causes of workplace developments, an unusually simple approach to estimation was followed. There was no experimentation with lag structures or with interaction effects, despite the potential afforded by the degrees of freedom available. In an attempt to avoid becoming embroiled in a data mining exercise which would tend to overplay the self-standing significance of the politico-economic indicators, as well as rendering interpretation extremely problematic, the conventional approach of testing from a very general model was thus rejected.

Moreover, only the relevance of only those variables found in preliminary explorations to have an independent relation to comparative fatal injury incidence - variables which turn out statistically significant when entered in a regression alongside only the annual dummies - was pursued further. The tables thus feature only those variables found to be independently related to injury incidence in this way. In effect, the approach to estimation



adopted represents an attempt to identify broad stylised facts in comparative fatal injury incidence.

Table 13 reports the results of various specifications, showing the coefficients on the variables and, in brackets beneath these, the corresponding t (or z) values. As is normal, values approaching two suggest the statistical significance of a variable. An attempt has been made in the selection of the specifications shown in the tables to give an indication of the precariousness or robustness of the statistical relation of fatal injury incidence to each of the variables. For the most part, the random effects estimator is used, with the fixed effects estimator used for the preferred specifications presented as summaries of key relationships in the last column of the table. In practice, the results of the random and fixed effects models were generally very similar, so that the Hausman specification test shown only in the final columns would be passed for most of the specifications presented in the table. But it is the fixed effects estimate which features country specific effects – estimates of a residual category pertaining to the enduring relevance of nationhood to comparative performance outwith the statistical relations between the particular variables included in the specification and fatal injuries.



Table 13. Panel estimates of correlates of comparative fatal injury incidence in manufacturing (per 100,000 employed).

| Specification                                       | 1                  | 2                  | 3                  | 4                  | 5                  | 6                  |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|   | RE                 | RE                 | RE                 | RE                 | RE                 | FE                 |
| Union density, %                                    | -0.063<br>(-4.645) |                    | -0.052<br>(-4.884) | -0.065<br>(-5.016) | -0.061<br>(-4.033) | -0.074<br>(-5.076) |
| Share of manufacturing employment in total, %       | -0.388<br>(-8.886) | -0.429<br>(10.186) | -0.335<br>(-8.588) | -0.371<br>(-8.727) | -0.369<br>(-8.951) | -0.421<br>(-9.637) |
| Share of alien labour force in total, %             | 0.523<br>(4.958)   | 0.602<br>(6.204)   | 0.398<br>(4.908)   | 0.480<br>(4.826)   | 0.445<br>(4.661)   | 0.510<br>(4.594)   |
| Share of profits in manufacturing, %                |                    | 0.084<br>(3.272)   | 0.117<br>(4.848)   | 0.070<br>(2.571)   | 0.096<br>(3.873)   | 0.072<br>(2.793)   |
| Rate of capital accumulation in manufacturing, % pa | 0.171<br>(2.819)   |                    |                    | 0.110<br>(1.690)   |                    |                    |
| Social security effort (ILO), % of GDP              |                    | -0.133<br>(-3.442) |                    |                    | -0.008<br>(-0.187) |                    |
| Health spending effort (OECD), % of GDP             |                    |                    |                    |                    |                    | -0.510<br>(-3.170) |
| Employment rate, %                                  |                    |                    | -0.027<br>(-1.041) |                    |                    |                    |
|   |                    |                    |                    |                    |                    |                    |
| Annual dummies                                      | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                |
|   |                    |                    |                    |                    |                    |                    |
| R-squared (adjusted, overall)                       | 0.5889             | 0.5739             | 0.6718             | 0.6282             | 0.6379             | 0.5898             |
|   |                    |                    |                    |                    |                    |                    |
| Hausman specification test                          |                    |                    |                    |                    |                    | OK                 |
|   |                    |                    |                    |                    |                    |                    |
| Country specific effects:                           |                    |                    |                    |                    |                    |                    |
|   |                    |                    |                    |                    |                    |                    |
| USA   |                    |                    |                    |                    |                    | -3.652             |
| Canada  |                    |                    |                    |                    |                    | -2.105             |
| UK  |                    |                    |                    |                    |                    | -1.824             |
| France  |                    |                    |                    |                    |                    | -1.529             |
| Norway  |                    |                    |                    |                    |                    | -0.134             |
| Japan   |                    |                    |                    |                    |                    | -0.646             |
| Sweden  |                    |                    |                    |                    |                    | 0.954              |
| Germany (West)                                      |                    |                    |                    |                    |                    | 1.522              |
| Finland   |                    |                    |                    |                    |                    | 1.598              |
| Austria   |                    |                    |                    |                    |                    | 2.083              |
| Italy   |                    |                    |                    |                    |                    | 3.701              |
|   |                    |                    |                    |                    |                    |                    |



Each of the eight variables listed in the table had an independent relationship with comparative fatal injury incidence, showing up as statistically significant in a regression featuring in addition only the annual dummy variables. The table gives some indication of the robustness of the statistical associations uncovered by multiple regression techniques, and indeed a feel for the results obtained more generally, by presenting the results of six different panel estimations.

The results demonstrate the relation of comparative fatal injury performance to several of the indicators of the shape of the broad political economy, though the more conventional economic indicators were of limited relevance. Indeed, the only conventional economic aggregate to bear an independent relation to comparative fatal injury incidence, the rate of employment, faded into statistical insignificance when entered in the estimation alongside almost any combination of variables, as specification 3 is intended to signal. Labour market conditions; the rate of employment, and still less the rate of unemployment, thus appear of little relevance to comparative fatal injury experience. Nor was any relation apparent with the indicator of product market demand. Moreover, no independent relation was apparent with openness to trade; no evidence here of the constraining effect of globalisation.

Several robust relationships are uncovered by the panel analysis, however, with a number of variables bearing a statistically significant relation to the incidence of fatal injury almost regardless of the variables featured alongside them in the analysis. Comparatively low rates of fatality were robustly associated with greater rates of union density and, particularly, with a greater share of manufacturing employment in total employment. There is thus general evidence of a relation between the power resources of organised labour and



the experience of fatal injury. More powerful and coherent labour movements are associated with a lower rate of incidence of fatality.

It is of course difficult to isolate the precise basis of these relations between the collective power resources of labour and industrial safety performance. The extensive presence of well established unionism in the workplace may be particularly important where industrial safety is concerned. To the extent that local organisation is seen to be effective with regard to health and safety this may then itself have beneficial consequences for union membership. The support for the activity of local organisation articulated through the larger movement may also be of particular importance to industrial safety.

The statutory buttressing of the role of local union representatives which has tended to result from generalised political exchange, and particularly from social democratic participation in government, may be of relevance to these statistical relations. Yet although the statutory co-determination arrangements and work environment legislation introduced in northern Europe in the 1970s may of themselves have helped to consolidate the currency of a discourse which stresses health and safety issues, a glance at the raw fatal injury data shows no shift apparent in the comparative fatality performance of these northern European nations in these years. This renowned legislation seemed to work no simple effect.

The results table also shows strong evidence of a relation between fatality incidence and the presence of a particularly exposed segment of the working population. The incidence of fatal injury is greater where there is a greater preponderance of non-naturalised migrants, or aliens, in the workforce. This result might be interpreted as a demonstration of the individual vulnerability of migrant workers; the particularly high 'cost of job loss' which they face. Alternatively, it might be interpreted as a further indication of the importance of collective unity for injury experience; the presence of a migrant group may imperil



collective identity, implying that all shopfloor employees are more exposed to management, regardless of their citizenship.

The panel econometric analysis cannot address this issue of the extent to which it is only aliens who are subject to a higher incidence of fatal injury and the extent to which it is the case that their presence as a distinctly vulnerable portion of the workforce has pernicious consequences for the indigenous or naturalised population. Evidence bearing directly on this issue is fragmentary. Statistics which distinguish the occupational injury experience of nationals and aliens, or the indigenous and foreign born, are very scarce, as the ILO (1977, 15) and the European Foundation (1986, 60) note. In the context of the general paucity of literature on fatal occupational injuries, as is noted by the European Foundation (1986, 51), there is still less pertaining to the relative experience of *fatal* injury of migrants.

Nevertheless, two ILO studies (1977; 1979) do provide some direct evidence that migrant workers do sustain a disproportionate number of occupational injuries. Evidence for France in 1971 and 1975 shows that the rate of incidence of all recorded injury amongst foreign workers was twice that amongst indigenous workers, and indeed that almost all the incidences of recorded occupational disease fell on foreign workers (ILO, 1979, 47-8). Evidence concerning the experience in West German industry in 1973 shows that whilst migrant workers in general are more likely to sustain both minor and serious injury (i.e. injury involving permanent physical damage) at work, the difference in experience is much more stark for the more minor injuries. Across all branches of industry, the ratio of the rate for West Germans to that for migrants was 1:2.7 for all injuries and 1:1.7 for serious injuries. Figures on one specific industry are also presented, showing that in metalworking these two injury ratios were 1:1.9 and 1:1.2 respectively (ILO, 1979, 37-40). The greater differential in experience with regard to more minor injury seems likely to be related at least in part to the turnover of the migrant workforce – it is well established that newly engaged



employees in general sustain more minor injuries and fewer severe injuries (see e.g. Nichols, 1997).<sup>lvi</sup>

Some limited statistics relating specifically to the relative fatal injury experience of migrant workers are also available in these ILO studies.<sup>lvii</sup> Unfortunately, these figures on fatal injury relate exclusively to West Germany. Nonetheless, these statistics are of course of particular interest in the context of the argument made in the present study that records of fatal injuries are by far the most reliable indicators of industrial safety performance. Fragmentary regional statistics presented by the ILO (1979, 94) are suggestive in this context. Although the annotation of the critical table is rather unclear, it seems that the rate of incidence of fatal injury in the 'machine and small industry undertakings' of Nordrhein-Westfalen and Rhein-Falz in the period 1969-70 was two or three times higher amongst the migrant workforce as amongst the indigenous.

The ILO (1977) carries more detailed data with much wider coverage, which is rather better annotated. It is clear that there is no uniformity of fatal injury experience amongst migrant workers of different nationalities, nor indeed any uniformity in the relative severity of the experience of any particular nationality present in several sectors. It is also clear, however, that, across the German economy as a whole, the rate of incidence of fatal injury amongst migrant workers is greater than that amongst German citizens (ILO, 1977, 15-17). Detailed data is presented for German industry in the period 1964-70, based on social insurance records (ILO, 1977, 56-8). The rate of incidence of fatal injury in the metal processing ('metallurgy') industry averaged 8.6 per 100000 amongst nationals, and 11.3 per 100000 amongst migrants. Across all other industrial sectors (excluding construction) the rates were 11.9 per 100000 for nationals compared with 15.3 per 100000 for migrants.<sup>lviii</sup> It is thus clear that the differential injury experience of migrants in Germany in this period was



not confined to minor, or even severe non-fatal, injuries, but extended to the incidence of death at work.

Thus, the fragmentary evidence on the relative experience of fatal injury amongst migrant workers does suggest that it is migrant workers who bear the brunt of the higher rates of fatal injury incidence which tend to accompany a greater preponderance of migrants in the workforce. This limited evidence on fatalities reinforces the impression given by the less dependable records of non-fatal injury. It does not seem that the presence of migrants simply undermines the position of indigenous labour; there is rather evidence of stratification in the workforce.

The results of the panel econometrics turn up further results richly suggestive as to the importance of the vulnerability of labour. Gauges of a more determined social expenditure effort show some relation to injury incidence. When the broadest measure of social welfare effort, total social spending as a share of GDP, is entered in estimations in the absence of union density (as in specification 2) it shows up as statistically significant. When, however, it is entered in estimations alongside union density (as in specification 5) it appears to have no relation to comparative injury performance. This is the result of the close statistical relationship between union density and total social expenditure effort, and of the stronger relation of the former to fatal injury incidence. Specification 6 shows, however, that a more restricted gauge of social expenditure effort, which has a looser relation to union density, shows up as a correlate of injury incidence even when union density is itself also featured. In sum, there is some evidence that greater social expenditure effort is associated with better fatal injury performance, even outwith its relation to union density.

This relation of social security to industrial safety may express the importance of the individual vulnerability of employees of itself for injury experience. The attenuation of the exposure to managerial prerogative which the welfare state affords the individual employee



may nurture their self-assurance and thus shape the working conditions they are prepared as individuals to accept. Worries over ill health and death may be particularly acute. The social provision of health care may be particularly important in attenuating the vulnerability felt by employees.

The statistical relation may however be a demonstration of the importance of this individual security for union members' preparedness to engage in industrial action, with all the implications of this for negotiation in both industrial and political spheres. Moreover, the relation may be partially underpinned by the relation of a nation's social security effort to the more general effective play of social democratic ideas within it. The apparent cross-national association between social rights to welfare and social rights in the workplace, legally entrenched or not, may thus be of much relevance to the statistical association.

There is also evidence of a robust relationship between fatal injury incidence and the share of profits in manufacturing value added. This evidence, that fatality incidence was greater where profitability was higher, deserves further comment. The absence of any relation between fatal injury incidence and the indicator of the growth in demand in the domestic economy, and indeed the non-robust relation of fatalities to the employment rate exemplified by specification 3, suggests that the relation of injury incidence to profitability expresses more than simply the relevance to injury of the pressure of orders. The result does not seem to originate in any relation of injury to the throughput of work (on which see Nichols, 1997). It seems to express something more immediately political.

To say that this relation manifests class struggle however, is, in a very real sense, simply to re-label the tension between working conditions and profit apparent in the comparative historical data here. The robustness of the relation, specifically its persistence in the presence of the gauges of the broad power resources of labour which may be employed in what Korpi (1983) terms the 'democratic class struggle' in the estimating



equation, suggests that it picks up influences on injury incidence which are at best imperfectly proxied by these political economic indicators. The tendency to greater fatal injury incidence where profitability is higher might well be underlain by a comparative historical tension between specific legislative protections, which effectively shape injury experience, and profitability. Specific statutory measures may tend to improve injury performance but may damage profitability.

To some extent at least, however, the relation may express the relevance of the concentration of ownership of capital, or of the control of capital, to fatal injury experience. Authors such as Cowling (1982) stress the relation of aggregate profitability to industrial concentration. The most powerful labour organisation of all, the Swedish movement, has historically actively encouraged the concentration of capital, in order to speed the maturation of the capitalist mode of production (see e.g. Korpi, 1978). Yet this concentration may ease employer organisation (see Fulcher, 1991). Moreover, the concentration of capital facilitates the sort of investment in facilities abroad which has increasingly characterised Sweden (e.g. Pontusson, 1992a). The establishment of a capacity for relocation implied may compromise the position of domestic labour. The empirical tension between profitability and injury may express the significance of these considerations for the ability of labour to pursue safer workplaces.

Alternatively, the relation between injury incidence and profitability may be an expression of the intensity and regularity of expression of anti-capitalist sentiment at the level of the workplace, sentiment surfacing regardless of the broader political economic environment. There seem very likely to be aspects of a nation's typical workplace culture (or sub-culture) at any particular time which are not reducible to the broader context of the employment relationship, or at least not to the power resource indicators constructed for econometric exploration here. Even given the broad balance of social forces, it may be more



difficult for employers to persuade certain nations' workforces at certain times that some change in work organisation is legitimate. Employee resistance, or indeed the active representation to managers of alternatives by employees, may tend to secure improved workplace safety, but inhibit profitability. This workplace level anti-capitalist sentiment might or might not be expressed in industrial conflict, particularly as it is gauged in official strike statistics.

Interestingly, the relation of injuries to the rate of accumulation does seem to express a *little* more than the relation of injuries to profitability, with which accumulation is closely linked. Specification 1 shows the statistical relation of accumulation to injury incidence when profitability is omitted from the multiple regression. However, the relation of accumulation to injury is apparent even in specification 4, which also includes profitability, although the relation does fall some little way short of conventional benchmarks of statistical significance. The slight tendency for injuries to be more common when the rate of accumulation is greater suggests that the introduction of new plant may be perilous for employees habituated to the established equipment of their place of work. There have been indications of such a possibility with regard to injury incidence more generally in case work on the auto industry. Milkman (1997, 152-155; 226-227 en 30) reports a doubling of the (non-fatal) injury rate for body-shop production workers on the introduction of robots to the department at General Motors Linden over 1985-1987. Adler et al (1997, 421; 424-426) report an exceptional level of (non-fatal) injuries in the course of the 1993 model change at NUMMI, which involved substantial new plant.

To some extent at least, however, it seems likely that the limited relation between accumulation and injury uncovered in the panel econometrics here is an expression of a relation between injuries and the pressure of orders. Accumulation may well be picking up something of the pressure of work which the crude indicator of the growth of domestic



demand, which itself bears no relation to fatal injury incidence, does not. This interpretation is much better consistent with the findings of Nichols (1991), who uncovers evidence of the importance of production throughput for fatal injury incidence in UK manufacturing.

Specification 6 summarises the nature of the results for those variables whose relation to injuries is most robust. The estimation is of a fixed effects model, which generates country specific dummy variables indicating the enduring relations of comparative injury incidence to nation. The similarity of the relations of injury incidence to the time varying variables apparent in this estimation to those in random effects estimation, reflected in the passing of the Hausman specification test, offers some reassurance about the validity of the statistical relations uncovered by the panel modelling.

Turning to the values of the coefficients on the nation dummies implicit in fixed effects estimation, the largest negative country specific fixed effects evidenced are those in the USA, Canada, the UK and France. The econometric models presented thus substantially overstate the incidence of comparative fatal injury in Anglo-Saxon nations and France in the sense that they suggest that there should be a greater incidence of fatalities in them given the power resource indicators derived for these countries. The intensive efforts made in the collation of the fatal injury incidence series to ensure the cross-national comparability of the data suggest that these findings cannot in general be interpreted simply as evidence that the extent of injury in the Anglo-Saxon nations and France is understated in the data used. The very particular nature of the system of statistical collection and collation employed by the British HSE is a cause for some concern, as we have seen, although there is, as we have also seen, substantial evidence that the fatal injury performance of Great Britain has historically been comparatively good, just as the HSE (e.g. 1991) figures suggest.

In this context, the panel results suggest that Anglo-Saxon labour performs unexpectedly well, securing a safer work environment than would be expected on the basis



of its power resources. It might be said that it ‘punches above its weight’ in a sense. To some extent, the Anglo-Saxon dummies may express the apparently exceptional burden of non-production employees carried by production workers in these countries (see Gordon, 1996). A particularly large segment of the manufacturing workforce may thus be shielded from risk in these countries.

However, the findings for the Anglo-Saxon nations also seem likely to reflect the purchase of a particularly assertive workplace trade unionism in these countries, even before the health and safety legislation of the 1970s buttressed their position. The findings thus seem evidence of the efficacy of the invasive job control historically exercised by many manufacturing employees in Anglo-Saxon nations through shopfloor activists, shop stewards and local union officials (e.g. Stephens, 1979; Turner, 1992; Rinehart et al, 1998; Elger, 1997; Fairris, 1998).

Britain serves as an interesting example, particularly given the historic influence of British industrial relations on practice in the broader English speaking world. During the 1970s, statutory reforms offered British unions a legal right to participation in health and safety matters. The provisions of the Health and Safety at Work Act of 1974 and of the Safety Representatives and Safety Committees regulations of 1978 provided opportunities for local union involvement (Nichols, 1997). It is far from clear that these statutory initiatives of themselves offered more than the work environment reforms common in other European nations in these years, however. Moreover, the comparatively good industrial safety performance of Britain stretches back to at least 1960. Whilst there was substantial pre-emption of statutory duties during the parliamentary consideration of the proposals (Nichols, 1997), it is inconceivable that the prospect of the 1970s regulations could account for the safety performance of British manufacturing in the years before 1974.



Britain has a well known tradition of workplace unionism, particularly in manufacturing industry, surveyed by Terry (1983; 1994). Already in the early 1960s, shop stewards were common in engineering and metal manufacture. By end of the 1970s, the presence of at least one shop steward, along with the recognition of at least one union, was near universal in manufacturing establishments of more than one hundred workers. At this time, whilst engineering continued to feature the greatest incidence of stewards, even industries such as food, drink & tobacco and clothing, leather & footwear featured stewards in more than three quarters of all establishments with more than fifty employees (see also Brown et al, 1981, Tables 4.1; 4.2). Although the 1970s saw some shift towards greater joint regulation at the level of plant or company as workplace bargaining was formalised, shop stewards remained key figures in industrial relations.

Workplace negotiation frequently extended to job control issues, including the pace and intensity of work, as Grunberg (1986) stresses in his discussion of the car industry. Terry (1983) argues that whilst management tended to be ambivalent about shop steward organisation, its general reaction was to seek accommodation in an ongoing relationship which offered some guarantee of future order and stability. With very few exceptions, workplace unionism offered no counter-ideology; job control was a matter of resistance, involving a reactive and opportunistic orientation (Terry, 1994; 1995). Nevertheless, given a measure of managerial goodwill, it could be effective.

In the years before 1980, workplace unionism thus afforded an important measure of control over working conditions in Britain, in a manner which seems in many ways representative of a broader Anglo-Saxon tradition (see e.g. Herding, 1972). Terry (1995) argues that whilst the institutions of British workplace unionism survived the 1980s largely intact, except in workplaces which had in any case featured very limited union membership,



the influence of shop stewards waned dramatically. A similar argument can readily be put for North America (e.g. Turner, 1991).

Yet the panel results show that Anglo-Saxon nations performed comparatively well in the period 1960-1995 considered in its entirety. Even with the erosion of traditional forms of procedural involvement from the beginning of the 1980s, Anglo-Saxon employers may have found it difficult to legitimate more hazardous work practices given the industrial relations legacy. Indeed, in his study of Chrysler/Peugeot Ryton and Poissy, Grunberg (1986, 511) argues that although there were real indications that the comparative safety performance of the British plant was weakening from the close of the 1970s, it remained a safer place to work than the French plant even in 1985. It is interesting, however, that the remarkable comparative superiority of the British industrial safety performance apparent in the raw fatality incidence figures was substantially eroded over the period 1960-1995, and particularly since the early 1970s.

The panel model's overstatement of the incidence of fatal injury in France, on the basis of the power resource indicators, is interesting in the light of debates about the peculiarity of French employers and the effectiveness of French style unionism. French managers are commonly characterised as paternal and authoritarian in their attitude to employees, with a keen awareness of their own status, although there has been recent suggestion of a shift away from such attitudes (e.g. Lane, 1989; Goetschy & Rozenblatt, 1992; 1998). The commitment of the comparatively few union members, and their remarkable historic militancy in the course of arms-length bargaining, is stressed by many authors (e.g. Stephens, 1979; Goetschy & Rozenblatt, 1992; 1998; Jeffreys, 1996). Although Grunberg (1986) argues that French workers have historically manifested intense class consciousness but comparatively little workplace power, it may be that militancy has to some degree attenuated the occupational peril latent in the tiny membership base of French



unionism, the historic divisions of its labour movement, and the comparatively extensive employment of non-naturalised migrants.

The largest positive country specific effects established are those for Italy, Austria, Finland and, to a lesser but intriguing extent, (West) Germany. The econometric models thus substantially understate the severity of fatality incidence in these countries on the basis of the political economic indicators. The fatal injury incidence rate derived for Italy *may* have been overblown a little by the inclusion of some commuter death – the treatment of such death in the country is rather ambiguous. Equally, the fatal injury incidence rate derived for Italy may be accentuated somewhat by the consideration in Italian occupational fatality statistics of the very large number of self-employed at work in Italian manufacturing.

However, in the light of the relevance of cross-border migration to injury experience, the Italian dummy may well express the extent of *internal* migration neglected in the quantitative proxies employed in the panel analysis. As Franzosi (1995) emphasises, Italy has seen comparatively exceptional internal migration from South to North, particularly in the 1950s and 1960s. Moreover, the strength of workplace organisation seems variable. To some extent this may be allied to the internal migration itself, but it seems also bound up with the ideological divisions of the labour movement, and with the remarkable preponderance of small establishments (see Franzosi, 1995).

The models' underestimation of occupational death in Austria on the basis of the political economic indicators is surprising. The very generous treatment afforded the nation in the construction of the fatal injury incidence statistics would suggest that, if anything, the econometric models would overstate acknowledged death in the country. In this context, the industrial safety performance of Austria seems remarkably poor. Austrian labour seems to 'punch' much below its apparent 'weight'. This very likely reflects the comparatively weak workplace presence of unions under what is widely regarded as a highly centralised system



(e.g. Crouch, 1993; Shire, 1994; Traxler, 1992; 1998). The peak level political exchange for which Austria is renowned regards macro-steering, with unions having very little regard to workplace issues, despite those opportunities afforded by the institutions of co-determination.

The significance of forest based industry, internationally perilous as it is, even within Finnish manufacturing activities, may account for the models' understatement of occupational death in Finland on the basis of the power resource indicators. The historic intensity of class conflict, the extent of strike activity, the formidable reputation of shop stewards, and the interest in establishing Swedish style co-determination arrangements (e.g. Lilja, 1992; 1998; Shalev, 1992) suggest that it is not the workplace weakness of labour which is responsible. Whilst it may be that the historic divisions within the labour movement (e.g. Lilja, 1992) have inhibited workplace activity, the country specific fixed effect for Finland seems the clearest indication of the influence which natural resources may have on injury experience.

The implications of the panel econometric modelling for the comparative industrial safety performance of West Germany are intriguing. The data on fatal injury in West German manufacturing assembled in the course of the current study describe an unexceptional industrial safety performance. Of itself, this contradicts the received wisdom that German industrial relations have long been characterised by social partnership and the workplace rule of law, whatever may have been the temporary disruptions to consensus (see Jacobi et al, 1992; Streeck, 1992; Crouch, 1993; Jurgens et al, 1993; Hyman, 1995). Relatedly, the humanisation movement in (West) Germany seems not to have had the effect which might have been expected, particularly given its attention to occupational health and safety (see e.g. Lane, 1989, 158-9).



Furthermore, the panel study shows that the comparative safety performance of West German manufacturing is substantially worse than would be predicted on the basis of the power resource indicators. Moreover, these power resource indicators do not themselves suggest that employees are in an especially strong position vis-à-vis employers. In particular, it is noteworthy that the panel model understates the comparative incidence of fatal injury in West German manufacturing even given the econometric allowance for the extensive alien employment in the national workforce.

Researching contentious areas of the German system seems problematic and workplace study remains a rarity (Edwards et al, 1995), so that the extent to which the findings of the statistical and econometric analysis can be further explored is limited. However, several authors have noted, sometimes in the context of specific manufacturing industries, the existence of a less attractive facet of West German employment relations. Berggren (1994, 72-3) contrasts the situation of the highly skilled, and almost always native born male, Facharbeiter to that of the unskilled, often foreign born or female, Massenarbeiter. He argues that the Facharbeiter emerging from extensive vocational training are often employed off-line, dominate the unions and works councils, constituting a de facto elite. In contrast, the Massenarbeiter performs repetitive, often line-based, tasks, has little chance of training or progression, and is poorly represented. Hyman (1991, 280) comments on the entrenched dualism of the West German employment structure, stressing the relevance of gender and nationality.

Consistent with these general commentaries, Herding (1972, 329-330) argues that the co-determination arrangements established in the steel industry under the 1952 legislation consolidated the historic hierarchical and status stratified nature of the industry. He characterises the result as a 'democracy of notables' in which by no means all were regarded as citizens, stressing the entrenchment of privilege. Herding (1972) further argues



that the absence of an effective local machinery capable of dealing with issues of working conditions has resulted in a poorer health and safety experience for the bulk of workers in West German steel than for those working in the US industry. He does however suggest that the traditional advantages of the direct democracy of the American shopfloor were being overwhelmed by burgeoning union bureaucracy by the beginning of the 1970s.

Herzog (1980) provides a moving ethnographic account of her experiences working in the West German engineering industry, cataloguing the intense work pressure and brutal conditions endured by immigrant women workers in the 1970s, even in the largest companies. The study of the tyre industry by Maitland (1983), reinforces the impression that for many working conditions in manufacturing are indeed poor, and the detachment from any effective interest representation virtually total. Edwards et al (1995, 301-3) cite intriguing evidence from a number of studies that (West) German industry features a relatively high rate of dismissals for reasons of personal conduct, despite the ostensibly tight legal regulation by the 1969 Dismissal Protection Act.

Nichols (1986), in arguing that practices in the West German operations of auto assemblers have tended to be comparatively hazardous, stresses the relevance of the historic ready availability to German employers of a vulnerable immigrant workforce. He (1986, 116) reports that in 1976 migrant workers comprised 70% of the line workforce at Ford Saarlouis and 90% at Cologne. This phenomena was not confined to West Germany – Nichols (1986, 116) notes that three-quarters of all line work in Ford's German, French, Belgian and Dutch facilities was done by migrant workers from Turkey, Spain, Italy, Morocco, Yugoslavia and other poorer areas. As Beynon (1973) notes, dismissal from Ford's West German operations could very well mean deportation for these foreign workers.

It seems that the situation may have changed somewhat in manufacturing since the apex in the use of migrant labour in the 1970s. Jurgens et al (1993, 116), basing their



comments mainly on the Volkswagen experience, argue that large numbers of foreign workers in the West German auto industry did not have their contracts renewed as the companies sought to insulate native born workers from the impact of the collapse of production of 1974/5, and that the employment of foreign workers in the industry never recovered. Alongside this, it seems that the number of skilled workers emerging from apprenticeships in the 1980s boosted the qualification of the workers in direct production, so that the Facharbeiter constituted 25-50% of those involved in (an evolving) standard production work in the auto industry of the mid-late 1980s, with this proportion set to reach up to 75% in the 1990s (Jurgens et al, 1993, 122).

It thus seems that the polarisation of forms of work and of working conditions in the auto industry has been substantially mitigated since the 1970s. Such processes may help to account for the comparative improvement in (West) German industrial safety performance through the 1980s and 1990s apparent in the raw fatal injury data for manufacturing. Nevertheless, the historical data in their entirety and the results of the panel study underscore the need for qualification of the celebrations of the (West) German industrial relations system.

The results for Japan are also fascinating. The raw fatal injury incidence data composed for the purposes of the present study show an unexceptional comparative performance. Whilst there was a dramatic improvement in the rate of incidence from the early 1970s, the incidence apparent even by the early 1990s was by no means outstandingly low. This is despite the confinement of the data to the fatal injury incidence to employees, in the context of substantial evidence of a more severe fatality experience in the smaller family operated plants and workshops which constitute a remarkably large proportion of Japanese manufacturing workforce. This should throw much doubt on any notion of Japan as a model of co-operative employment relations (cf Womack et al, 1990; Dore, 1997).



Moreover, the fixed effects panel estimations show that the model does not overstate fatal injury incidence in Japanese manufacturing on the basis of the power resource and other political economic indicators. Given comparatively low union density, a moderately large manufacturing sector, little social welfare provision and a very high profit share, although a very small vulnerable alien presence in the workforce, Japan's comparative safety performance is as the modelling predicts. The nation's fatal injury performance is consistent with the general vulnerability of its employees, not representing anything unusual in this context. There is certainly nothing here to support the view that Japan represents an employment relations phenomenon. Overall, the scepticism of authors such as Berggren (1994) and Elger and Smith (1994) about the substance of Japanese employment relations seems warranted.

## **Conclusion**

Overall, the stylised facts revealed by the panel econometric analysis of the comparative rate of fatal injury incidence demonstrate the relevance of the power resources of employees for industrial safety experience. Indicators of the power resources of organised labour and of the individual employee bear statistical relations to comparative fatal injury experience. The relation of fatal injury incidence to the presence of non-naturalised migrants, a particularly vulnerable group, is striking. However, the relation of injury experience to profitability is a specific indication that the gauges of power resources employed do miss much of the industrial relations process. It is at the same time though a confirmation of the relevance of the political economy to industrial safety. There is also evidence in the final panel estimation of the enduring pertinence of a tradition of assertive workplace unionism. In sum, the analysis suggests that the shape of the political economy,



and most of all the presence of effective social regulation, is intimately related to comparative fatal injury performance.



## **9. The political, the economic, and annual hours of work.**

The previous chapter explored the societal conditions which are associated with comparative fatal injury incidence. This chapter employs the quantitative indicators of the shape of the political economy to similarly investigate the pattern of comparative average annual working time. As in the econometric investigation of the pattern of incidence of fatal injuries, the panel analysis reveals statistical relationships between hours and indicators of the power resources of labour. The relationship established between hours and the extent of the non-naturalised migrant workforce is of particular interest. Again, there is evidence of a relation between profitability and work humanization, but there is evidence here too of robust relations of hours to more conventional economic indicators. Moreover, once again, there is a strong suggestion of the relevance to humanization of enduring, unmeasured, national societal characteristics.

### **Influences on working hours**

Just as mainstream economists' treatment of the incidence of industrial injury has been almost exclusively confined to an exploration of the relations between wages and injury incidence, their theoretical and empirical examination of working hours has centred around explorations of the relationship between hourly wages and hours worked. In the canonical competitive equilibrium framework, working hours have most commonly been regarded as being optimally (and trivially), selected by omniscient employees, given prevailing parameters which reflect a prevailing set of technological conditions and individual preferences (of which the real wage then somehow adjusts to ensure equilibrium)



(see e.g. Varian, 1992). Working hours need not necessarily be associated with rates of pay in any particular fashion, as the canonical framework allows hours to vary either directly or inversely with the hourly rate. Employees may view higher wages as an opportunity to earn much more in a few additional hours, or to reduce their time at work at little or no financial cost.

There is a pervasive presumption, deriving from neo-classical microeconomic theory, that shorter hours must be paid for in some way. The implicit counterfactual, itself implying a very particular pattern of causality, is that earnings, properly gauged, would be higher if hours were longer. It would certainly be of some interest to explore the historical comparative relation between hours and hourly wages, but establishing comparable statistics on wages and earnings, making appropriate allowances for additional payments and fringe benefits, is notoriously difficult. The impression given by those efforts made to establish real wages based on purchasing power parities suggest that cross-nationally, comparatively short working hours are not generally associated with lower levels of earnings (see BLS, 1997b). Moreover, the relation between hours and wages, the prices and quantities of the economist's labour market, is not the only issue worthy of exploration in the field of study.

Recently, Stewart & Swaffield (1996) have squarely confronted the typical attitude amongst economists that working hours reflect the choice of employees, a choice made in a context itself left unexamined. Stewart & Swaffield (1996) employ data for UK households to examine the constraints on weekly working hours faced by male manual workers, finding some evidence that hours are lengthier for individuals facing greater job insecurity. Although this contribution finds no statistical connection between unionism and the extent of working time in their study, there is some evidence elsewhere of such a relation. Pencavel (1991) reviews several studies of US employees using various gauges of working time which show evidence that hours of work are shorter amongst union members. Green &



Potepan (1988) present a study based on data on US households which finds that union members, and, as would be expected given collective agreements, more senior workers, tend to have lengthier vacations. In more recent work, Green (1997) presents similar findings for the UK on the basis of the figures of the Labour Force Survey.

Cowling & Brack (1983) take a quite different approach in examining the historical development of the weekly and annual hours of US production workers over 1919-76. They find evidence that hours tend to be shorter when the hourly wage rate is greater, which they interpret as an indication that employees have somehow opted to take some of their higher potential income in the form of leisure. Thusfar, the analysis reflects the conventional approach within economics. More interestingly, they also find evidence that lengthier working hours are associated with a greater intensity of advertising, particularly where advertising messages are treated as an influence on employees which can have an accumulating influence over time. Unfortunately, the international statistics on aggregate advertising expenditures necessary to extend this work in a comparative dimension are not available (personal communication with Keith Cowling).

Research in industrial sociology and industrial relations on working time tends to suggest that collective bargaining arrangements and management strategy are the key influences (see e.g. Blyton, 1989; Arrowsmith & Sisson, 1999). Although there is occasionally the suggestion that negotiators themselves determine hours of work through collective agreements, there is more commonly an analysis of the forces which act on the process of strategy formation and collective bargaining itself. Recently, Arrowsmith and Sisson (1999) have stressed the importance for patterns of working time of the interplay between human resource management strategy, the nature and intensity of product market competition, the production systems employed and the internal structure of companies. Their contribution, however, which deals with printing, engineering, retail and health, emphasises



in particular the importance of sector for working time patterns, despite the trend to localisation in agreements. Arrowsmith & Sisson (1999) recognise the role of the nature of the market place and of production systems in this, but regard the sectoral connection with working time patterns as expressing in large part the reluctance of management to depart from systems known to function, and also the importance for management that their action be viewed by employees as legitimate against the backdrop of a sector specific industrial and employment relations legacy. Herding in management practice results.

Where collective bargaining is quite generally more substantial, analysts have tended to emphasise rather more the influence of union campaigning on working time. Several commentators have argued that in the West Germany of the 1980s particularly unions' success in reducing working time was a product of their emphasis on the issue in their broader pursuit of humanization. This emphasis is said to have framed not only IG Metall's strategy of extending vacation entitlements to 6 weeks, building on the concession won initially by steel workers by the 1979 IG Metall sectoral strike, but the pursuit of the reduction of weekly working hours through the succeeding years of 1980s and into the 1990s through sectoral negotiation with the engineering employers federation, featuring the 1984 strike (Jurgens et al, 1993, 120-1; Jacobi et al, 1992, 250). IG Metall's success in reducing working time through extending vacations from the 2 weeks common in the early 1950s to the 6 week norm of the 1990s, and in securing agreement on a 35-hour working week for the mid-1990s, is suggested to have set the pace for negotiators in other sectors (e.g. Jacobi et al, 1992, 250). There is a distinct danger in such commentaries of overstating the autonomous influence of union stance and collective bargaining in themselves. The possibility that collective agreement may be inconsequential is increasingly realised (e.g. Ferner & Hyman, 1998a).



## **The econometric investigation.**

The statistical analysis of the comparative historical pattern of average annual hours of work in manufacturing presented earlier shows substantial societal diversity of experience across the eleven nations examined over the thirty-six years, 1960-95. This chapter seeks to explore the comparative historical relationship between annual hours of work in manufacturing and indicators of the nature of the prevailing national political economy. The approach is informed by, but rather different to, those most common in the analysis of developments in working time. Particular attention is given to the pertinence of gauges of the power resources of labour, whether these are individual or collective. As with the examination of the pattern of fatal injury incidence, multiple regression analysis is used as a tool to aid interpretation, rather than in the expectation that it transcend description and allow the reading off of causal relations amongst variables. Again, the good sized data field, comprising 396 observations in all, affords much potential.

As with the econometric investigation of the pattern of fatal injury incidence, the use of 35 annual dummies to deal with time series issues implies that the examination is of the associations of comparative annual hours, and also that the test of the relevance of the political economic indicators is stringent. Random and particularly fixed effects estimation provides some insulation against the possibility that the data on annual hours derived still feature some traces of enduring national idiosyncrasies in statistical collation. Once again, only those variables which bear some relation to annual hours when entered in panel estimations with annual hours and the annual dummies alone were featured in further analysis, and it is only these that thus feature in the results table. As before, there was no experimentation with lag structures or interactions, with the sole aim being to identify some stylised facts. The table is intended to give a flavour of the robustness of the statistical



relations uncovered. The t and z values are reported in brackets beneath the coefficient estimates. With so many observations, even the extensive list of independent variables implied by the inclusion of annual dummies eats relatively little into the number of degrees of freedom in the panel analysis. Thus t and z values of 2 are more than sufficient to satisfy the conventional demands of statistical significance; that the relations be significant in a two-tailed test at the 5% level.



Table 14. Panel estimates of correlates of comparative average annual hours of work in manufacturing.

| Specification                                      | 1                   | 2                   | 3                   | 4                   | 5                   | 6                   |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | RE                  | RE                  | RE                  | RE                  | RE                  | FE                  |
| Union density, %                                   | -1.473<br>(-2.893)  | -1.431<br>(-2.670)  |                     | -1.218<br>(-2.230)  | -1.245<br>(-2.389)  | -1.050<br>(-1.885)  |
| Share of manufacturing employment in total, %      |                     |                     | -3.308<br>(-2.369)  | -2.615<br>(-1.809)  | -3.033<br>(-2.156)  | -3.350<br>(-2.235)  |
| Alien LF, %  | -19.680<br>(-6.021) | -21.311<br>(-6.219) | -15.621<br>(-5.021) | -18.365<br>(-5.571) | -18.039<br>(-5.511) | -19.031<br>(-5.450) |
| Share of profits in manufacturing, %               | 3.156<br>(3.411)    |                     | 3.176<br>(3.595)    | 3.228<br>(3.683)    | 3.207<br>(3.641)    | 3.192<br>(3.594)    |
| Rate of capital accumulation in manufacturing, %pa | 5.726<br>(2.571)    |                     | 5.224<br>(2.362)    | 5.325<br>(2.433)    | 6.790<br>(3.217)    | 4.498<br>(2.062)    |
| Social security effort (ILO), % of GDP             | -7.690<br>(-4.967)  | -7.650<br>(-4.766)  | -10.933<br>(-8.715) | -8.592<br>(-5.568)  | -8.907<br>(-5.810)  | -8.027<br>(-4.933)  |
| Growth of domestic demand, %pa                     | 0.534<br>(0.355)    |                     |                     |                     |                     |                     |
| Employment rate, %                                 | 2.091<br>(2.327)    |                     | 1.738<br>(1.884)    | 1.712<br>(1.868)    |                     | 1.574<br>(1.689)    |
| Unemployment rate, %                               |                     | -1.439<br>(-0.763)  |                     |                     |                     |                     |
|  |                     |                     |                     |                     |                     |                     |
| Annual dummies                                     | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
|  |                     |                     |                     |                     |                     |                     |
| R-squared (adjusted, overall)                      | 0.7448              | 0.6808              | 0.7188              | 0.7323              | 0.7271              | 0.7088              |
|  |                     |                     |                     |                     |                     |                     |
| Hausman specification test                         |                     |                     |                     |                     |                     | OK                  |
|  |                     |                     |                     |                     |                     |                     |
| Country specific effects:                          |                     |                     |                     |                     |                     |                     |
|  |                     |                     |                     |                     |                     |                     |
| Italy  |                     |                     |                     |                     |                     | -146.423            |
| Finland  |                     |                     |                     |                     |                     | -110.669            |
| Sweden   |                     |                     |                     |                     |                     | -85.347             |
| Norway   |                     |                     |                     |                     |                     | -66.392             |
| France   |                     |                     |                     |                     |                     | -6.263              |
| USA  |                     |                     |                     |                     |                     | 8.272               |
| Canada   |                     |                     |                     |                     |                     | 33.714              |
| Germany (West)                                     |                     |                     |                     |                     |                     | 40.221              |
| Austria  |                     |                     |                     |                     |                     | 66.598              |
| UK   |                     |                     |                     |                     |                     | 103.678             |
| Japan  |                     |                     |                     |                     |                     | 162.610             |

The specifications featured give some flavour of the multiple regression results. Each of the nine political economic indicators included in the estimations reported in the table



bore some statistically significant independent relationship with comparative annual hours of work, when entered only with the annual dummies. The results for average annual hours show robust relations to several of the gauges of the nature of the power resources of labour. No relation between hours and openness to trade was apparent, highlighting once again the limits of action of globalisation. Otherwise, all the conventional economic variables showed up as bearing some relevance to hours, although often their relation was not at all robust, and it is to these that we first turn.

Although the gauge of the growth of domestic demand bears some independent relation to annual hours, such that comparatively long annual hours are associated with a higher rate of growth of domestic demand, this relation is very sensitive to the inclusion of any other variables in the regression analysis, as specification 1 is intended to indicate. This may well be a result of the proxy's inadequacy, such that the relevance of the pressure of orders and of capacity utilisation for hours may well underlie some of the other statistical relationships apparent in the table. In this regard, however, specification 2 exemplifies the failure of unemployment to come through strongly when entered in the analysis alongside other variables, demonstrating its irrelevance even when none of the other variables pertaining directly to demand conditions are featured.

The relation of comparative annual hours to employment is more robust. There is some evidence that where the rate of employment is higher, annual hours worked are longer, although as comparison of specifications 1, 3, 4 and 6 shows the significance of this relation on conventional gauges is a little sensitive to the inclusion of other variables. The rate of employment seems most likely to be expressing something of the relevance of demand in the product market for the annual hours of those employed. The absence of any trade-off between employment and annual hours is of interest in the context of the debates on work spreading which have often featured in the literature on social corporatism and social



democracy (e.g. Glyn, 1992; 1995). There is no evidence here that more jobs result contemporaneously from shorter hours for all.

The robust statistical relation of the annual average hours of work to the rate of accumulation of capital in manufacturing is also apparent in the table (specifications 1 & 3-6). Given the paucity of the indicator of product demand used here, and the relation of investment to aggregate demand conditions (see e.g. Glyn, 1997), this finding can perhaps best be interpreted as a manifestation of the importance of product market demand for annual hours worked. It may also be the case that employers tend to demand longer hours of their staff when new plant is introduced, as they seek resolutions of the inevitable problems this introduces. However, the relation may express in part a tendency for employers to invest more where working hours are longer.

Turning to the results with regard to the indicators of the power resources of labour, several sturdy statistical relations are apparent. Comparatively short annual hours are robustly associated with greater union density across specifications 1 to 5. However, specification 6 shows that the estimation of a model which features *both* the employment rate and an indicator of social expenditure effort, to each of which density is itself related, imperils the statistical significance of the relationship between hours and density at the conventional 5% level. Even in this single specification, however, the critical value necessary to establish the significance of the relation in a two-tailed test at the 10% level is easily surpassed.

There is also evidence that hours tended to be comparatively low where the manufacturing sector weighed more heavily in employment. Only in the random effects estimation of specification 4 of the table, in which the variable is entered alongside both density and the employment rate, with which it has some relation, is the significance of the statistical relation between the share of manufacturing in total employment and annual hours



of work in any doubt. Once more, however, even in these circumstances, the relation remains significant at the 10% level.

There is thus substantial evidence of the pertinence of the power resources of organised labour to comparative annual hours worked, although it is perhaps a little weaker than that with regard to fatal injuries. At minimum, the relations apparent in the table touch conventional levels of significance, and in almost all the specifications far surpass them. Even where they do not, it is far from clear that the relations should be discarded, as there are good reasons to believe that these indicators of the power of organised labour substantially underpin the values of the indicators which partially eclipse them. Generally, the results suggest that more powerful and cohesive labour movements, centred around manufacturing industry, are associated with shorter average annual hours of work in the sector.

The isolation of the specific mechanisms captured by these relations is of course difficult. It seems likely that the results manifest the relevance of the capacity of labour for industrial action coupled with relatively centralised collective bargaining for annual hours actually worked. Peak level and industrial agreements have often featured reference to working hours, whether there result statutory control of some kind or not. The incomes policies concluded under tripartite negotiations in Finland over the years 1995-1999 have all featured clauses regarding working time, although Lilja (1998) reports that these agreements now represent only guidelines. Doubtless, the statutory regulation of hours of work emerging from generalised political exchange and indeed social democratic participation in government too play a role in underpinning these relations. However, agreements forged at national or sectoral level must be mandated by company level conditions and pre-dispositions. Moreover, the increasing tendency towards sectoral umbrella or menu agreements very obviously shifts the action to the local level (see, e.g. Ferner & Hyman,



1998a). It is also quite possible that the statistical relations may express in part the importance for aggregate developments of informed local union presences for plant negotiations and contract administration. This role is apparent from the longer hours worked in small Italian plants characterised by little or no unionism (Franzosi, 1995).

The more participative workplace employment relationship often regarded as prevailing in nations with high union density or relatively extensive manufacturing employment may well also be of relevance to sustaining comparatively short hours. To some extent though, such a participative employment relationship, may initially be in part prompted by such comparatively short hours. Antagonism may be too expensive a luxury where working time is restricted. Moreover, the societal penetration of an ideology which stresses the importance of time away from work may both nurture and be nurtured by these various phenomena.

In Austria, though, it does seem clear that it is principally unions' enduring concern to sustain or increase employment, and quite little else, which has been central to those reductions in work time which has originated in labour organisation. The highly centralised Austrian union movement has been heavily influenced by arguments that shorter hours of work can sustain employment, bringing attempts to shorten hours in co-ordinated industrial agreements (Traxler, 1992; 1998).

The relation of annual hours worked to social expenditure effort is amongst the most statistically significant and robust uncovered by the panel investigation. Although the significance of the relation is much increased when union density is excluded from the estimation, the result remains strong even in the presence of this variable, with which social security effort is closely related. The findings may well reflect the importance of the individual power resources of employees for the hours which they work. More vulnerable individuals may much more readily be prompted to work longer hours. The welfare state



allows employees the effective opportunity to take time out away from work to develop other aspects of their lives (Esping-Andersen, 1990).

It may also be, however, that the statistical relation is a further expression of the importance of collective power resources. A measure of individual security may be a critical basis of collective action, just as authors such as Korpi (1978) suggest. Moreover, the development of social expenditure effort through political exchange seems very likely to be cross-nationally related to the effective collective or statutory regulation of working time, whether through measures relating specifically to hours or those, such as co-determination arrangements of northern Europe, which range more broadly.

The striking relation of annual hours to the extent of the alien workforce is worthy of further comment. Shorter hours were closely associated with a greater preponderance of non-naturalised migrant workers, with the relation robustly highly significant. It thus seems that the presence of a distinctly exposed segment of the workforce may have served to allow the shortening of annual hours worked, at least as averaged across the national and non-national workforce. The presence of a more vulnerable segment of the workforce seems to have allowed an improvement in this aspect of the working conditions of a nation's typical manufacturing employee.

It might be argued that the inverse relationship between average annual hours and the proportion of aliens in the workforce is simply an expression of the tendency of employers to look outside national frontiers for labour where product demand is high and workers domestically are achieving reductions in working time; that short hours of work cause migrant labour. However, even with the inclusion of the annual dummies in the estimation, fatal injury experience is closely related to the proportion of aliens present in the previous year, and not only contemporaneously (results not shown here). This suggests that the underlying pattern of causation may be more complex. Allied to this, the relation between



annual average hours and the proportion of aliens in the workforce is little effected by the presence in estimation of the proxy of domestic demand conditions, or indeed of the profitability or capital accumulation variables with which one might well imagine product market demand is associated.

Moreover, even to the extent that the statistical relation does indeed reflect employers' demands for labour in the context of the limits put on working hours by organised labour, the interpretation of this itself is not simple. It is not at all clear that one can reasonably characterise such a situation as one in which short hours cause migrant labour; much is glossed over. Such immigration reflects employers' desire not simply for more employees, but for employees of a certain type. Specifically, migrant employees offer employers a more vulnerable workforce than that available in the domestic society, and thus afford management an extended prerogative. In addition, for employers demands to be realised, governments, and to some extent at least unions, must accept the implication of a workforce stratification.

To some extent immigrant labour may thus indeed express the success of domestic labour in advancing its conditions, and the consequent enthusiasm of employers to introduce new labour subject to less social protection. But the counterfactual is critical here. If it were the case that new vulnerable labour could not be introduced, as a result of opposition from the state and unions, could the reduction of hours be deepened, or sustained? To the extent that this is in doubt it is reasonable to talk of the presence of an alien labour force as a factor facilitating the shortening of working hours. Whatever the precise dynamics of the patterns of mutual conditioning involved, it seems quite reasonable to interpret the presence of an alien workforce, as a distinctly exposed segment, as an influence facilitating reductions in average annual working hours. It is crude to interpret the relation between hours and alien



presence as a simple matter of the satisfaction of employers' demands for labour, though of course consistent with the emphases habitual to neo-classical economists.

In a sense, the very different relations apparent from the separate panel estimations between the proportion of aliens in the workforce and annual hours worked, and between the proportion of aliens and fatal injury incidence constitutes a puzzle. If the presence of a greater proportion of aliens aids the reduction of average annual hours why does it not aid the reduction of the average incidence of fatal injuries? The most plausible resolution of the puzzle depends on the recognition of the differences in the typicality of the working conditions expressed by the two indicators. It seems that fatal injury incidence reflects disproportionately the experience of those working in the least tolerable jobs, those at the *very* bottom of the capitalist pile. The relatively favourable injury experience of management as against employees, of white as against blue collar workers (see for the US, BLS, 1998), is consistent with such a general proposition. It is this which appears to underlie the finding that the presence of a larger alien workforce is cross-nationally associated with shorter annual average working hours but a greater rate of fatal injury incidence across manufacturing employees as an entirety. Average hours reflect the median representative experience much better than does the average rate of incidence of injury.

Interestingly, it seems likely that unions and the practice of collective bargaining may have played some role in this very variation in the extent of the differential in the experience of citizen and alien workers with regard to fatal injuries as opposed to annual hours. The lesser visibility of fatal injuries, stemming in large part from the rarity of their occurrence at any one workplace, seems very likely to imply a less acute awareness amongst any group of the workforce of the relative severity of their experience. In this context, employers have little to legitimate, and differences may more readily be sustained. Then, of



course, the entrenched institutional arrangements of collective bargaining tend to be such as to favour the relative uniformity of working hours.

The former issue of visibility may have contributed something to the historic centrality of hours, rather than safety, in collective bargaining agendas. Relatedly, unions can more readily administer the contracts which result from negotiation over hours, with observation and grievance procedures in this regard more manageable. Moreover, unions may more readily articulate demands for reduced hours and perhaps more easily have these demands regarded as legitimate by employers under capitalism (see the discussion of Hyman, 1972).

The table also shows the robust relation of the share of profits in manufacturing value added to annual hours worked (specifications 1, 3-6). Shorter annual hours are associated with a smaller share of profits. As is the case with the incidence of fatal injuries, then, better working conditions are associated with lower profitability. To some extent, the relation may be an expression of the tendency of annual hours to be longer when demand in the product market is greater, but the robustness of the relation in the presence of other variables relating to such demand conditions suggests that something more is manifested in this result. Once again, profitability seems to be capturing more of the political than the conventionally economic.

The relation appears to express something of the importance of the relative power resources of labour not fully captured by the other indicators of the texture of the political economy. It may best be regarded as an expression of the action of some anti-capitalist sentiment at some level, whether this is institutionalised in the statutory framework of industrial relations, in specific legislative measures bearing on working hours, effected in collectively bargained agreements on working hours at some level, or indeed simply



expressed at the level of the workplace itself. This is of relevance to the ability of employers to legitimate longer hours.

It is also conceivable that the tension between profitability and hours is much more bare a product of capital's power. The relation may be an expression of the importance of the concentration of control over capital for the power resources of employers. Profitability may indicate the concentration of ownership which both eases the domestic organisation of employers in opposition to labour and nurtures the capacity of individual employers' to threaten a relocation of production overseas when confronted with demands for shorter hours.

The country specific effects emerging from the fixed effect panel analysis are of much interest. Certainly it would seem extremely unlikely that the country dummies are a simple reflection of enduring differences in national practice with regard to the collation of statistics, as there seems little evidence of differing national practices in this regard in the figures on which the present study is based. The most extreme country specific fixed effects are those of Italy and the three Nordic nations, and, at the other end of the spectrum, of Japan, the Anglo-Saxon and Germanic nations. On the basis of the political economic indicators, the model substantially overstates hours in Italy, Finland, Sweden and Norway, and understates hours in Japan, the UK, Austria, West Germany and Canada.

The models' overstatement of hours in Italy, implied by the large negative fixed effect, may in part express an understatement of actual hours worked in the working time data assembled, despite the care taken. Franzosi (1995, 178-179) notes that the particularly long hours worked in the smaller companies of manufacturing have traditionally been comprised in part by unpaid overtime. It is highly likely that such work time would be neglected in all the various sources used to construct the working time data used here, with some underestimation of average annual hours data resulting.



The extent of the overstatement of Italian hours on the basis of the political economic indicators suggests that something more may be expressed, however. It seems that a distinctively Mediterranean anti-capitalist spirit was acting at some level to curtail the hours spent in paid employment. Franzosi's (1995) historical account of industrial conflict stresses the significance of the communist unions for developments in Italy, emphasising the pertinence of the established anti-capitalist ideology for developments at critical junctures, and particularly during the *autunno caldo* of 1969 and its aftermath. Although these years saw substantial legislative reforms, with the institution of the *Statuto dei Lavoratori* in 1970, the rights so granted were essentially individual (Ferner & Hyman, 1992b). Much of the expression of this anti-capitalist spirit may have been at workplace level rather than manifest in, or effected through, legislation. Whatever the relative weight of these different channels, there seems to have been a particular reluctance on the part of Italian workers to bow to the prevailing power resource advantage of employers. Of course, the shortening of average hours may have been much eased by the remarkable internal migration characterising Italy.

The models' overstatement of average annual hours in the Nordic countries seems likely to be related to the emphases of the well-articulated Nordic unionism on the humanisation of work. The results suggest that this spawned legislation on employment protection, the work environment and co-determination of an influence disproportionate even to the impressive power resources of labour reflected in the quantitative gauges employed in the panel estimations. Of course, the extent and depth of the penetration of social democratic ideas in these nations by the 1960s and 1970s, rather than specific legislative measures, may have been the critical influence on developments in annual hours.

Amongst the fixed effects resulting from the panel estimation for the Nordic nations, that of Finland is of particular interest. Rather a Nordic exception, Finland saw generalised political exchange develop comparatively late, with societal bargaining impeded by the



political divisions within the labour movement until the close of the 1960s. Moreover, the country's exceptional strike propensity was not attenuated by the centralisation of collective bargaining from the early 1970s, with the substantial presence of communist unions apparently pushing social democratic unions too into militancy (see Lilja, 1992; 1998). These unusual conditions have hardly undermined the shortening of hours. In part, Finnish employers may have had more difficulty legitimating lengthy hours due to the proximity and growing influence of Scandinavian industrial and employment traditions and assumptions. This may well have eased the achievement of the shorter hours which the unions have historically favoured.

The models' substantial understatement of hours in Japan may express the workplace legitimacy of capitalism in the country, a legitimacy which might be conceived as an individual work ethic. Even taking as given the paucity of the power resources of labour in Japan, hours are exceptionally long. This may be related to a shared national determination to recover economically from the intense suffering of the Second World War and its aftermath. Most likely, the crushing of independent unionism in the 1950s (see Berggren, 1994) is also of relevance. Ideas of social democracy, and particularly of work humanisation, have always had a tenuous hold in a nation where the labour movement consists of a very loose federation of the company unions of the largest corporations.

The model also understates hours in the Anglo-Saxon countries, and most particularly in the UK. The power resources of British labour are certainly unexceptional by international standards, but even given these hours are peculiarly long. It is conceivable that the ideology of empire (see e.g. Stephens, 1979) has exacerbated the incoherence of labour in pursuing time free of work, distracting labour from claiming time from employers. There is some evidence in the results, however, that the particularly fragmented nature of the union



movement in Anglo-Saxon countries more generally has implications for hours which reinforce those of the quantitative power resource gauges.

The understatement of hours in Austria seems likely to be related to the centralised nature and circumscribed agenda of the Austrian union confederation, the ÖGB. Traxler (1992; 1998) notes the preoccupation of the ÖGB with economic growth and unemployment. Shire (1994) underscores the lack of interest apparent in workplace issues, a disinterest which, it seems, extends to hours. The social democratic, or social corporatist, discourse in Austria seems confined to issues of macro-steering, with grassroots dissent limited (see also Rowthorn, 1992). This may well have been more important for developments in working hours than the minor differences between the statutory arrangements for works councils in Austria and (West) Germany (on which see Traxler, 1992; 1998; Shire, 1994).

The understatement of hours in (West) Germany itself is surprising, and the finding is a little more sensitive to specification than the country specific effects reported for the other countries. The emphasis on working time in the pursuit of humanisation was to frame IG Metall's strategy of extending vacation entitlements to 6 weeks, building on the concession won initially by steel workers by the 1979 IG Metall sectoral strike (Jacobi et al, 1992, 250). It framed also the IG Metall pursuit of the reduction of weekly working hours through the succeeding years of 1980s and into the 1990s through sectoral negotiation with the engineering employers federation, a campaign featuring the famous 1984 strike (Jurgens et al, 1993, 120-1; Jacobi et al, 1992, 250). IG Metall's success in reducing working time through extending vacations from the 2 weeks common in the early 1950s to the 6 week norm of the 1990s, and in securing agreement on a 35-hour working week for the mid-1990s, has led similar settlements in other sectors under the auspices of the DGB. Despite such much publicised efforts, at all levels of negotiation, working hours in Germany are



certainly no shorter than would be predicted on the basis of the quantitative indicators of labour's power resources.

## **Conclusion**

Overall, the power resources of labour do seem of substantial relevance to comparative annual actual working hours. Conventional economic indicators also bear some relation to hours. The empirical tension between working hours and profitability provides a specific suggestion that the broad brush econometric analysis performed here misses much of the industrial and employment relations action. The country dummies derived with the fixed effects estimator suggest that the presence of ideologies legitimating the defence of time away from work is of much importance.



## 10. Conclusion

This thesis offers an overview of comparative historical developments in aspects of work humanization in the manufacturing sectors of a variety of leading industrialised countries. There are profound difficulties in gauging the aggregate extent of the managerial hierarchy, despite the faith shown by David Gordon (e.g. 1990; 1996) in such indicators. Conversely, the data on fatal injury incidence derived here are dependable, despite the pessimism of Theo Nichols (e.g. 1997) about the scope for comparative work in this area. Moreover, the data on average annual hours actually worked derived are also dependable. These latter series, derived for eleven countries over the period 1960-1995, represent a unique data field.

The data allow an examination of the comparative historical patterns of development. Statistical analysis confirms what a cursory glance at the raw data suggests; the limited relevance of the logic of industrialism or of forces of globalisation in these areas of workplace employment relations. There is little evidence of the erosion of societal diversity. Whilst it is clear that national systems should certainly not be considered timeless (Edwards & Elger, 1999), there is the clear suggestion here that national societal characteristics matter for workplace outcomes.

A number of stylised facts emerge very clearly from the econometric analysis of the statistical correlates of comparative work humanization, despite the stringency of the approach to estimation adopted. Both fatal injury incidence and average annual hours worked bear relations to quantitative indicators of the shape of the national political economy. There are generally robust relationships with the indicators of the individual and



collective power resources of labour, and with manufacturing profitability in particular. The results for the country specific dummies may be interpreted in large part as demonstrating further the importance of traditions of labour organisation.

Whilst richly suggestive, the present statistical and econometric study does have definite shortcomings. It concerns only three dimensions of work humanization, those most readily quantified in aggregate, and attention focuses on but two of these, with the third found grossly suspect. Ultimately, the characterisation of working conditions afforded can only be considered partial, and that of work humanization more severely so. The significance of the phenomena as gauges of the broader nature of employment relations remains to be established; substantial cross-national convergence may yet be in train in many aspects of the employment relationship. This may be in large part be a convergence on similar patterns of corporate led intra-national diversity, of the type identified in, for example, Crouch (1994).

Uncertainties also remain regarding the econometric analysis; it is often not at all clear what it is that the data categories capture which is causally related, as the commentaries on the econometric results seek to demonstrate. The distinction between description and analysis is in practice problematic. There is the ubiquitous danger of a mechanistic interpretation of statistical associations, of being too keen to make sense of the patterns in the past. The temptation is perhaps most intense with respect to the statistical relations established between work humanization and the power resources of labour. The involved discussions of the present thesis of the meaning of the quantitative indicators of the power resources of labour with which injury and hours are shown to be related hardly resolves the issue.

Edwards (1986, 280), drawing on Emmett and Morgan's synthetic work, argues that workplace developments are partially insulated from external forces. But this 'semi-



permeable membrane' appears quite pervious to Grunberg (1986, 503), who argues that aspects of the broad political economy do 'penetrate the walls of the factory'. Nolan and Walsh (1995, 54) argue the 'intractability' of the critical issues of the influence of the 'labour market' on the workplace employment relationship, in the context of their comment (p.50) that much work in industrial relations treats the employment relation as a 'relatively autonomous subsystem'. Their commentary echoes the critique made by Richard Hyman (1994a; 1995). It is not at all clear whether the forces reflected in the statistical relationships uncovered by the present thesis act within the workplace or outwith it.

Korpi (1978; 1983) argues that the broad power resources of labour shape specific institutional arrangements and shade their operation, but at the same time acknowledges the role of these institutions in bolstering the power resources of labour, stressing the effect of specific institutional arrangements on interest definition and social identity. Many other authors emphasise the role of institutions, whether macro or micro in their character, in their own right (e.g. Fulcher, 1991; Ferner and Hyman, 1992a). Such work stresses the space for interaction amongst aspects of the political economy. In this context, the indicators of labour's power resources employed in the present study may perhaps best be interpreted as partial expressions of bundles, or clusters, of political economic attributes and forms of social regulation, some of which they may of themselves help to nurture, and with some of which they may be bound in a process of dynamic mutual conditioning.

Conceivably, though, the data categories taken to proxy the power resources of labour may be expressing principally discourse, whether in the state arena, in collective bargaining, or in the workplace. Relatedly, these data categories may express the confrontation of the social identity or legitimacy of management. The present econometric analysis does not reveal whether it might be discourse which is the critical lever in shaping work humanization, or whether societal shifts in discourse may be necessarily predicated



upon the more material power resources with which they seem historically related. Similarly, it is difficult to determine whether profitability, with which both comparative fatal injuries and annual hours are in tension, expresses workplace level anti-capitalist sentiment, the framework of labour law, domestic employer organisation, or indeed the intensity of the production relocation threat.

Moreover, the role of work humanization in shaping the political economy, and particularly the power resources of labour, is left largely unexplored here. Korpi (1983) and Pontusson (1992a) stress the importance for unions and social democratic parties of demonstrating the relevance of collective action to the course of daily life. Comparatively good working conditions may be taken by workforces and electorates as evidence of the effectiveness of social action, and thus nurture unions, labour movements and welfare states. With regard to working time, comparatively short hours of work may indicate the psychological space necessary for political reflection, and perhaps thus, given some anti-capitalist strand of culture, favour labour movements. In such ways, indicators treated here as essentially outcomes of the political economic context may have a role in shaping it. Working conditions and the broad power resources of labour may be mutually conditioning.

To some extent, though, the quantitative indicators of the political economy may best be considered simple expressions of underlying influences situated deeper in the social structure, or of particular historical events. Certain conditions may, quite generally, nurture labour organisation, whilst a specific conjuncture of events may lead to the formation of institutional arrangements which then tend to be perpetuated. Stephens (1979), Korpi (1983), Esping-Andersen & Korpi (1984), Fulcher (1991), Crouch (1993) and Kelly (1998) are amongst the authors who seek to explore the particular and the general factors which have influenced the development of national labour movements.



In another respect, the limitations of the present study are apparent in the very tables of econometric results. The limit of the statistical relations; the variance remaining unaccounted for in the broad brush econometric analysis, speaks volumes. No historical laws governing social phenomena have been uncovered. There is space for ideology, action and structural dynamics (Hyman, 1972; Korpi, 1978; Martin, 1992; Pontusson, 1992a; Ramsey, 1993). Labour movement strategy is not determined by power resources, as Pontusson (1984; 1992a) stresses. Meanwhile, both state activity and the institutions forged at particular junctures possess their own life and logic (e.g. Ferner & Hyman, 1992a; Crouch, 1993). Then, within the broad political economic context, the ideologies, framings, styles, goals and strategies of management also matter (e.g. Crouch, 1993; Godard, 1997).

In sum, the analysis presented in this thesis is not at all fine grained. The generative process underlying the stylised facts apparent is still largely obscure; the issue of how the material and the ideological enter remains. To some extent, statistical and econometric work could aid the unpicking of the causal relations underlying the stylised facts established. There is scope for developing the present approach, with more detailed econometric investigation, although this carries dangers of data-mining and spurious precision. Statistical work at other levels of analysis could also be employed. But much of the exploration of the vital issues of causality must depend on rather different research methods. In Ragin's (1987) terms, 'variable oriented' analysis, such as that forming the empirical core of this thesis, needs to be complemented by detailed 'case oriented' analysis. The identification of critical cases, whether at the level of nations, industries, companies or workplaces, seems of particular importance for the exploration of the relative significance of the various causal mechanisms which may be shaping developments in the humanization of work.

For all this, though, there is a kernel of real value in the present comparative historical overview. There is substantial evidence that the forces of globalisation have hardly



pressed a convergence to homogeneity in developments in work humanization. Moreover, whilst the precise basis of the relations remain largely substantially unexplored, the quantitative comparative historical evidence revealed by the econometric study demonstrate the importance of the vulnerability of employees for employment relations. The 'flexible' labour market has concomitants not commonly acknowledged by its proponents. Judging by the evidence assembled here, a policy of 'letting managers manage' and 'easing the burden on business' is a recipe for stagnation and reversal in the humanization of work.



## Data appendix

### Aggregate union density.

The principal source for the union density series was Visser's (1989) attempt to derive time series for density in European nations, but this was complemented by a number of other sources. The series derived here estimate the active union density, i.e. density amongst those employees in employment, thus seeking to take account of the extent of the unemployed and retired membership. In some cases, figures for one or two years were missing in the main source, and were estimated by projecting the trends in membership and dependent employment suggested in other sources.

The series for West Germany is based on Visser's (1989) series for the density of non-pensioned union members as a proportion of the employed dependent population, which corresponds closely with the benchmarks for 'employed', or active density, standardised for both unemployed and retired members, which feature in Visser (1991, 101; 121). Visser's (1989) series is extended beyond 1985 with the use of the density estimates for the former West Germany published in Van Ruysseveldt & Visser (1996) and the ILO World Labour Report 1997/8. This splicing involves some inflation of the density rates published in these more recent sources.

The series for France relies mostly on Visser's (1989) series for non-pensioned members in dependent employment, which corresponds with the active density benchmarks of Visser (1991). The problematic nature of statistics on union membership in France is discussed by Jeffreys (1996), and can be further appreciated by a comparison of the developments in density suggested by Jeffreys with those implied by Goetschy (1998). Visser's (1989) series is extended with the use of Van Ruysseveldt & Visser (1996), with Jeffreys (1996, Table 1) and the ILO World Labour Report 1997/8 for the last few remaining years to 1995.

The series for Italy is based principally on statistics presented in Visser (1989), but with considerable caution. Although the exclusion of retired and self-employed members from series is noted, some unemployed members, particularly those industrial workers supported by the benefit arrangements of the Cassa Integrazione Guadagni (CIG), are included (Visser, 1989, 107). However, there is a very limited discrepancy (less than 2%) between the membership figures cited by Visser (1989) and those relating only to employed membership presented for 1980-5 in Ferner & Hyman (1992b), even though these were years in which the CIG was used intensively. To the limited extent that the use of Visser's (1989) figures include unemployed members, this may help to offset the exclusion from his calculations of the membership of the so-called 'autonomous unions', operating mainly in the public sector, which Visser (1989, 107-9; 1991, 125) regards as increasingly significant. The treatment of the third and smallest union confederation, the Unione Italiana del Lavoro (UIL), is more problematic. Membership of its affiliates is excluded from Visser's (1989) series until 1968, and indeed from the time series data constructed by Romagnoli & Della Rocca cited by Ferner & Hyman (1992b) until 1970, around the time of the formation of the Federazione Unitaria. Estimates of the extent of UIL's affiliated active membership in the 1960s were projected from indications of its growth in Visser (1989; 1991), and Van Ruysseveldt & Visser (1996). The density statistics were collated to include this estimate of UIL's active members from 1960, and Visser's (1989) series was extended with the help of Regalia & Regini (1998) and the ILO World Labour Report 1997/8.



The principal source for Norway was, again, Visser (1989). This was complemented with more recent statistics from the ILO UNION database. Substantial efforts were made to exclude the many retired members who feature in Visser's (1989) aggregate density series and in the ILO UNION database. In this, close reference was made to Visser's (1991) work, which aids in the assessment of the rate of growth of the retired membership. The spliced series which was derived features density rates a little below the benchmarks estimated by the most recent work done for the OECD (Traxler, 1994; OECD, 1997d).

Membership density for Austria was derived from Visser (1989) and Traxler (1998), with much effort made to adjust for that part of the recorded membership retired. The adjustment was done principally with the help of Visser's (1991) snapshots of both total recorded and active density, but taking into account also the suggestion from a comparison of the figures cited by Traxler (1994) with those of Visser (1991) that the proportion of all membership retired was growing no more from the second half of the 1980s.

Active density in Sweden relied principally on Visser's (1989) series. The series was extended with Visser (1991), Traxler (1994), Van Ruysseveldt & Visser (1996) and Kjellberg (1998), sources which cite approximately commensurate rates for overlapping years. The series for active density resulting contrasts starkly with the relentless growth in density implied by membership figures in some sources which include both unemployed and retired workers, although the density rates derived remained above 80% even by the mid-1990s.

Finland is not covered by Visser (1989). A series for the density rate was derived from the five yearly benchmarks which appear in Lilja (1992; 1998) and, in the absence of alternatives, the plot of the development of density featuring in Kauppinen (1994). This series was adjusted for the readily apparent inclusion of the retired, even if not the unemployed, membership by deflating it to bring it into line with the mutually consistent benchmarks for active density which feature in Visser (1991), Traxler (1994), and the OECD (1997d), and obtainable from the figures on the employed memberships of the confederations which feature in Kauppinen (1994).

The construction of the series for the UK was problematic. Although it is not clear from Visser (1989), the comments of Visser (1991) and comparison with Bailey & Kelly (1990) make it clear that Visser's (1989) series feature retired members in the membership totals on which his density rates depend, and indeed include also self-employed and unemployed members. The only way to correct for the self-employed membership is to deflate the entire series according to the estimate of the extent of self-employment in 1989 made by Stevens and Wareing (1990), as is suggested by Visser (1991). Deflating the entire density series by a constant amount to adjust for the inclusion of unemployed and retired members in the manner suggested by Visser (1991) and Bailey & Kelly (1990), seems an overly drastic and arbitrary solution, however. An estimate of the growth of the retired membership, to the 5.75% estimated by Bailey & Kelly (1990) for 1986, conservative by international standards was made to derive an estimated series for the retired membership. A series for the proportion of the membership openly unemployed was derived with the use of BLS (1996b) standardised rates on the assumption that the ratio of the prevailing aggregate rate of unemployment to the rate amongst union members was constant at the sixth implied for 1986 by Bailey and Kelly (1990). The resulting series is consistent with the recent active density benchmarks of Visser (1991) and Traxler (1994), although the condition sensitive adjustment made for non-active membership in the derivation of the series effects relatively high rates in the earlier years of the series.

Several mutually consistent sources are used to derive the series for Japan. Statistics on membership for the early years are from the Japan Statistical Yearbook (Statistics Bureau, 1970; 1975), and these complemented by OECD figures on wage and salary



earners. Later density statistics are from Price (1989) and the ILO UNION database. The notation of the Statistical Yearbook of Japan, carrying statistics consistent with those in the other sources, suggests that the figures are for active density.

The earlier active density rates for Canada are taken from Bain & Price (1980). These are extended forward on the basis of the official estimates which feature in Price (1989) which do neglect the membership of some unions. The resulting series is projected further on using the figures for density which appear in the ILO UNION database, figures which, from comparison with data from Labour Canada (1988, Table 1), relate to density amongst non-agricultural employees. The ILO World Labour Report 1997/8 provided the rate for the last few years. The extensive splicing involved in the construction of the series implied very small adjustments in the figures presented in the various sources.

The density rates for the United States depend on several sources. The membership figures derived by the NBER presented in Bain & Price (1980, Table 3.1) were spliced to those derived by NBER/Troy presented in Price (1989), with OECD figures on wage and salary earners used to create a series for density to the mid-1980s. This was then spliced onto the more recent density data presented in the ILO UNION database, a procedure involving a slight inflation of the earlier rates.

The series for aggregate active union density thus cautiously derived represent the best that is possible with current sources, and should be taken as offering a good indication of the comparative historical extent of union membership.

## **Welfare effort**

Several alternative gauges of social spending as a proportion of GDP, 'welfare effort', are available, covering differing groups of nations. The International Labour Organisation (ILO) measures of social expenditure, which have been used in much of the quantitative work in political science on welfare provision, take account of all the very substantial programmes instituted by statute, as well as some of the voluntary schemes which are much less significant in terms of expenditure (ILO, 1996). In these statistics, it seems the figures on public or social assistance are the least comparable, but such schemes constitute a small component of social expenditure (Wilensky, 1975, 125-6). The EC, now EU, notion of social expenditure has historically been a little broader than that employed by the ILO, though the difference in estimates of welfare effort have been small (Wilensky, 1975, 127).

The ILO statistics on social expenditure as a proportion of GDP (or GNP in earlier years) were until recently published in the ILO's periodic International Inquiries on The Cost of Social Security, and are now presented on the ILO web site. The series for welfare effort published is derived from 'benefits' expenditure (e.g. column 5 of ILO (1996, Tab 3)), rather than that from 'total' expenditure (e.g. column 4 of ILO (1996, Tab 3)). These ILO expenditure shares relate to social expenditure on medical care, on other benefits in-kind and on cash benefits, but exclude administrative and 'other' expenditure. Since a 1978 re-classification, and in recent associated revisions of earlier data where these have been made, the figures have excluded expenditure on some 'public health services', a category featuring, in the cases of many nations, some 'medical care' not regarded as covered by social insurance (ILO, 1985, 2-3; 1996, 4-8; Pampel & Williamson, 1988, 1435, fn. 8). The re-classification underlies the current exclusion of capital expenditure (on, e.g. the building of hospitals) and the exclusion of expenditure on environmental health, the training of health personnel, and on campaigns against infectious disease (ILO, 1985, 3). The treatment of such categories of expenditure is of significance primarily for developing countries (ILO, 1985, 3), and it may reasonably be thought is likely to have a rather limited impact on the



social expenditure recorded for the countries under study here, all the more so since the exclusion was effected only in 1978, when the core of the physical infrastructure for health care was in most cases long established.

Although the ILO makes particularly much of exclusion of some 'medical care' from 1978, there is evidence that in practice this seems to have made little difference to the total expenditure recorded. The figures for the year 1975 published in the last International Inquiry, ILO (1996), supposed to be derived on the new, narrower, basis, are very closely comparable, often near identical, to those published for 1975 in earlier editions of the International Inquiry, which included this particular component of medical expenditure. Any differences are certainly no more than those which tend to feature more generally due simply to periodic revisions in national series on output or social expenditure.

Specifically, ILO social spending data relate to the following areas (see Korpi, 1983, 259, en. 15; Pampel and Williamson, 1988, 1433; ILO, 1996, 3-4): medical care expenditure covered by social insurance, sickness and invalidity benefits, unemployment benefits, statutory old-age pensions, occupational injury benefits, maternity & family allowances & benefits, public assistance and benefits for war victims and special social insurance for public employees - civilian and military

The ILO measure of social expenditure excludes spending on housing, with which there are problems of data availability (Pampel & Williamson, 1988, 1434, fn7). However, as Wilensky (1975) notes, there is some evidence that housing programmes tend to be more generous where other forms of social expenditure are greater, so that the exclusion of such measures does not constitute a fundamental difficulty. ILO figures are quite widely accepted as a reasonable and comprehensive guide to social expenditure effort, where this is taken to exclude education (see e.g. Wilensky and Turner, 1987, 80).

In general, there is very little discrepancy between the contemporary ILO International Inquiries published with the aim of covering in detail a certain short span of years, and the benchmarks published in later inquiries which take account of later revisions to national accounts. In general then, the ILO data are characterised by consistency, with, for example, the proportions cited in ILO (1967), which focuses on 1961-3, for 1960 being very close to the benchmark cited for 1960 in ILO (1979) (focusing on 1972-4). In a few cases, however, there are substantial discrepancies between the proportions published in the original inquiry and those cited as benchmarks in subsequent inquiries. Where this is the case the original, more dated, series, has generally been spliced on to the benchmark cited in the more recently compiled tables, a procedure involving adjustment of the earlier figures. In some cases, however, there are grounds for suspicion that a discontinuity results from a deterioration in the quality of the figures published, in these cases other methods of splicing are used.

For the years 1990 onwards, the welfare effort figures compiled by the ILO are sporadic. The OECD's measure of social security transfers as a percentage of GDP, from OECD (1997f, Table 6.3), was used to estimate the ILO measure into the period 1990-95 for which complete ILO measures are unavailable. The OECD figures relate only to transfers, excluding benefits in kind. Specifically, they refer to 'social security benefits for sickness, old age, family allowances, social assistance grants and unfunded welfare benefits paid by general government.' (OECD, 1997f, 79 n1). Those sporadic benchmarks which are available in the latest Inquiry, for various years in the period 1990-1993, in general confirm the validity of the projections here, although the ILO benchmarks for recent years for Italy and Norway are so low that their continuity with earlier data is in severe doubt, and their significance thus discounted.

In general the projections from OECD transfer data were done by using the ratio of the (more encompassing) ILO measure for 1989 to that of the (more narrowly conceived)



OECD measure for 1989 to inflate the OECD measure for each year over the period 1990-95. To the extent that a growth in social security transfers results from increased unemployment in recession, this procedure tends to exaggerate the growth in overall social expenditure, involving as it does the assumption that other social expenditure has risen as have transfers. Thus, where OECD standardised unemployment data suggests that there has been a dramatic increase in unemployment between 1989 and the early-mid 1990s, an alternative procedure was used. This took the (absolute) excess of the ILO measure for 1989 over the OECD and added this to the OECD measure for each of the years 1990-95. This additive procedure avoids the problem of the multiplicative procedure discussed above. It was employed in the cases of Canada, Finland, Sweden and the UK. In each of these cases the movement of unemployment in the first half of the 1990s is indeed reflected quite clearly in the movement of the OECD transfers measure. The more limited nature of the ILO data for Italia and Norway, even in earlier years, required more a more extensive estimation procedure which is detailed for these individually below in the following discussion of the treatment of the figures presented in the ILO Inquiries.

In the case of Austria, the statistics for 1960-3 presented in ILO (1967) showed a substantial discrepancy, of 1.5% points, with respect to data published later for the years 1960-1. Thus the ILO(1967) data for 1960-3 was spliced onto the benchmark data published later at 1960.

The Finnish case is rather complicated. The ILO's most recent Inquiry, that for 1990-3, published on the web in 1998, suggests that social security expenditure as a proportion of GDP exploded by 15% points 1990-3, climbing from 24% to 39%. This is a growth in the share of GDP devoted to social protection over 1989-93 much more rapid than that apparent in the OECD social transfer data, which one would imagine would be influenced more powerfully by the terrible recession suffered in Finland in the early 1990s. Statistics Finland's Yearbook of Statistics (1996, Table 414) features apparently temporally consistent data on total welfare effort which show a rise of around 11% points, from 27% to 38%. This domestic source, complemented by further consistent Statistics Finland data for 1995 presented in the Finnish manual union confederation, SAK's, (1998; Table 10.8) Statistics about Finland, are used as the basis of the projection for Finland for 1990-5 in place of the OECD transfers data. The series derived for current purposes was created by splicing on the shares from the national sources to earlier ILO data, a procedure involving a deflation of the Statistics Finland data. Essentially, I have assumed that the series published before the 1990-3 Inquiry by the ILO were better indicators of the comparative magnitude of the Finnish social security effort around 1990 than these most recent figures, and that the ILO overstates the explosion of the expenditure share 1990-3, with Statistics Finland more reliable as an indication of the growth.

In the case of France, a number of minor issues arose. No data are available for 1967, either in the ILO (1976) Inquiry 1967-1971 covering this year or in subsequent inquiries. Moreover, ILO (1976) does not feature data on any of the categories of social expenditure for France, 1967, so that the total social welfare effort cannot be estimated from ILO sources. Since OECD data suggests a fall of around 0.5% points in the share in this year, this is used as the basis of an estimate. The fall in the social welfare effort apparent between 1965-1966 and 1968 is corroborated in the benchmark data presented in the two later Inquiries, ILO(1976; 1979). There seems no basis for it in any change in collation. The leap in the social security effort apparent over 1971-2 is confirmed in every ILO Inquiry referring to the years of the early 1970s. In each case, the figures are thus taken to reflect an actual phenomenon.

The collation of a series for Italy is complex. Although the early figures seem satisfactory, the more recent ILO Inquiries feature fragmentary figures which are often



partial. The annotation comments that the figures only relate to those schemes on which data was available. Even the much larger than typical figures presented during 1985-1989 are said to exclude social expenditure for public employees, on public assistance and on war victims (ILO, 1996, 62 n3 & n60). ILO (1992, 70 n11) comments that data for 1984-6 exclude all these categories of expenditure, and in addition exclude expenditure on the national health service. The figures published in ILO (1996) for 1985 and 1986 seem to suffer the same problem. There seems little evidence of a collapse in social expenditure in the period 1984-6 with respect to 1983 in the specific expenditure category less seriously effected by this incompleteness - cash benefits (ILO, 1992, Tab 1).

Since the ILO data for Italy from 1978 on is so fragmentary, the more encompassing ILO measure was estimated from the OECD transfers series over the entire period 1978-95. The figures were taken from OECD Historical Statistics 1960-83; 1960-89; and 1960-90 in addition to the 1960-95 (OECD, 1997f) edition used more generally here. In the light of the mounting unemployment problem of the 1980s, intensifying further in the 1990s, the additive method of splicing (using the difference between ILO and OECD measures for 1977) was used to avoid overestimating the share of all social expenditure in GDP. The danger of underestimating this share, which seems particularly relevant here in the light of the extended period of estimation, does not seem of much significance in practice. The shares estimated for the first half of the 1990s would have been only 1-1.5% points higher had multiplicative rather than additive method of estimation been used. Moreover, the shares derived using the additive method are comparable with the (various) available ILO data for the early 1980s, and indeed marginally exceed the more dubious shares suggested by the ILO at the close of the decade. Little seems lost by the procedure.

The compilation was also convoluted in the case of Norway, as the figures presented in the more recent ILO Inquiries are problematic. No real explanation is offered of the apparent jump in the proportion of social spending in GDP from 1983 to 1984 which was temporarily sustained through to 1986. It is noted that the expenditure data for 1984 and 1985, though not 1986, apparently, are 'not strictly comparable' with data for earlier years (ILO, 1992, Tab 1; p.70 n.5). The sudden fall in expenditure apparent in 1987 and sustained thereafter seems entirely due to the unavailability of data on expenditure on general health, hospital services and the public dental service and public assistance in medical care (see ILO, 1996, 63 n62). There is certainly no collapse in the Krone expenditure (at current prices - see ILO, 1996, 7) on cash benefits detailed in ILO (1996, Tab 1) in Norway from 1987.

Due to the confusing nature of the data published by the ILO for Norway after 1983, the ILO measure was estimated from the OECD transfer series over the extended period 1984-95. The OECD transfer series is very closely related to the share of cash benefits in GDP which may be derived from the ILO Inquiries (Tab 1), even for those years when the total share of social expenditure in GDP cited by the ILO seems, or is acknowledged to be, unreliable. Data for 1990-5 from OECD (1997f) were spliced onto the mutually consistent earlier data from the editions covering 1960-83, 1960-89 and 1960-90, as the proportion stated in OECD (1997f) for 1988 & 1989 was 3.6% points lower than that stated in the earlier editions. The OECD based series was then itself spliced to the ILO using the ratio of the ILO measure for 1983 to the OECD transfers measure for this year. The multiplicative rather than additive method was used because although, by Norway's standards, unemployment was mounting from the late 1980s, the rise amounted to only a couple of % points.

Indeed, it doesn't seem that this procedure overestimates the share of total social spending. The resulting estimates fall below OECD snapshots of the total of social security and health expenditure published in the Employment Outlook of 1994, by 2% points in



1990, compared with the 1% point by which ILO data fall short of the OECD figure in 1980. It thus seems likely that Norway's share is a little underestimated by the procedure. The additive procedure would exacerbate this shortfall - it would have resulted in shares some 1.5-2% points lower than those derived under the multiplicative by the 1990s.

The problems for Sweden are quite minor. There is no apparent data availability or collation basis for the jump in welfare effort 1987, which seems thus an actual phenomenon. The only other issue concerns the very earliest figures. The figure for 1960 taken from ILO (1967), 12.1% (of GNP), does differ substantially from that shown in ILO (1976; 1979), of 10.7% (of GDP). However, this was taken along with the data for the other years covered in ILO (1967), 1961-3, which do correspond well with the figures published in later Inquiries.

In the case of Canada, the principal issue is that the benchmark for 1975 presented in the more recent ILO Inquiries show that there is a slight discontinuity in the basis of collation of the series at 1977-1978. Stability in OECD transfer share series 1977-78 was used to splice ILO total share series 1969-77 to that for 1978-89. This involves a slight deflation, of around 0.5% point, of the shares suggested by the earlier sub-series. Data from Table 3 of OECD Historical Statistics 1960-81; 1960-90; 1960-95, all of which are almost exactly mutually consistent, were used. The lack of movement of the OECD transfer series over 1977-8 was taken as an indication of the development in the total social expenditure share in preference to a reliance on an ILO benchmark for the total share in 1975 cited in the later Inquiries. If used, this latter would imply a jump in the total share 1977-78 which is not reflected in the OECD transfer data and for which there is no basis in movements in unemployment. The estimate for 1969 resulting from this procedure was used to splice on data for 1960-69 from the internally consistent 1960-71 sub-series, involving a deflation of this early data of 1-1.5% points. Thus the share for 1960 derived was 7.9%, compared with the 9% actually cited in the earlier Inquiries.

For the US, the data for 1960 were taken from ILO (1976), and for 1961 from ILO (1972), with figures for 1962 & 1963 spliced on using data from ILO(1967). The resulting series for the first half of the 1960s reflects the stability of the proportion of output devoted to social expenditure in this period evidenced in later Inquiries though not in ILO (1967). The data for 1960-77 from the early Inquiries was spliced onto the data for 1978-89 from the more recent Inquiries using the benchmark for 1975 quoted in the recent Inquiries. This involves a slight deflation of the earlier data. The resulting series suggests a total social expenditure share which falls some way (2-3% points) short of the benchmarks suggested in the OECD Employment Outlook 1994 for the years 1980 and 1990.

In the case of Germany, the only point worthy of note is that the statistics on transfers from OECD Historical Statistics which are used to project the ILO total welfare effort over 1990-1995 refer since 1991 data refer to the newly unified Germany.

#### OECD based measures of welfare effort.

Although the OECD data on social expenditure shares which appear in the OECD's Historical Statistics, and which are used here to extend the ILO series relating to total benefits, relate only to 'social transfers' (public transfer payments) the OECD does derive estimates of expenditure on social protection over GDP on a wider basis. Indeed several alternative gauges of welfare effort seem available from OECD sources. Esping-Andersen (1996, Tables 3.2; 5.2) features measures of welfare effort, total social expenditure over GDP, drawn from the OECD's National Accounts. These figures are a little higher than the statistics on total welfare effort, which do feature both expenditures on social security and health, used in the preparation of contemporary Employment Outlooks, which draws on the



historical statistics which feature in Table 1 of the OECD's (1994b) *New Orientations for Social Policy*. The latter figures are better comparable with the ILO expenditure shares.

Whilst broadly similar, the OECD figures represent an alternative to the ILO series, and, moreover, have the advantage of allowing the construction of separate series by broad social programme which might be thought to allow a closer approximation of 'social rights' using expenditure data, particularly in the case of pensions provision in which the numbers of the 'at risk' group dependent on the expenditure is clearer. The more recent figures presented in OECD (1994b) can be complemented with the statistics presented in the OECD's (1985) *Social Expenditure, 1960-1990: Problems of Growth and Control*. These series are derived on a similar basis, relating not only to the transfers made under social security programmes, but to health expenditure and to at least some other in-kind benefits. The OECD Social Expenditure Statistics (of 1/4/1984) presented in the study rely on various national sources, principally national accounts, and on Eurostat and Yearbook of Nordic Statistics data (OECD, 1985, 75-77). Expenditure on education is treated alongside such spending under the broadly defined rubric of social expenditure employed in this particular OECD source and features in the data relating to total social expenditure presented (e.g. Tables 1 & 3; Annex C). Excluding the education element from consideration as a qualitatively different commitment (see e.g. ILO, 1989), the time series presented in OECD (1985, Annex C) relate to the following categories of social expenditure: 1) Health: hospitals and clinics, dental and para-medical practitioners, public health, drugs, treatments, equipment and appliances, related research and development, 2) Pensions: old-age, disability and survivors benefit, public employees' pensions, 3) Unemployment compensation: social insurance and other relevant public schemes, 4) Other social expenditure: sickness, maternity, temporary disablement benefits, family and child allowances, other social assistance and welfare services.

The OECD's (1994b) *New Orientations for Social Policy* presents (summary) series for public expenditure on social protection as a percentage of GDP which are derived directly from the series presented in the 1985 study (OECD, 1994b, Table 1a drawing on OECD, 1985, Annex C). Comparison with the earlier source confirms that the data on social protection cited in the OECD (1994b) study exclude expenditures on education. It also features new estimates for the period 1980-1990 (OECD, 1994b, Tables 1b & 1c). The data are derived, often through involved procedures, from a variety of national sources and from Eurostat studies of the various aspects of social protection (OECD, 1994b 59; 61). These latter series, for 1980-1990, break expenditure on social protection down into the following categories: 1) Public Health: (no further detail), 2) Aged: old-age and survivors benefits, i.e. 'all transfers and services to the elderly and survivors' including civil servants pensions, whilst excluding non-compulsory supplementary and occupational pensions, 3) Non-aged: invalidity/disability benefits; occupational injury and disease compensation/benefits, pensions and services; employment promotion; unemployment compensation; maternity benefit and family allowances; housing benefits; low income benefits; other benefits and services; administration costs.

Together, then, these two OECD sources allow the derivation of alternative series for total welfare effort to that harvested from ILO sources, but also allow the derivation of separate series approximating the evolution of public health spending, of spending on the aged, and on expenditure on the non-aged (unemployment compensation and other social benefits) over the period 1960-90.

In general, the share of all social protection expenditure in GDP suggested by OECD (1985) for 1980 falls reasonably close to the total share suggested for this year by OECD (1994b). The shares cited for Austria, Canada, Norway, the US and West Germany in the more recent sub-series differ from those in the earlier by less than one percentage point,



whilst the discrepancy for Finland, Japan, France and Italy lies between 1 and 2 percentage points. This suggests that the basis of the series have changed relatively little and that splicing is relatively unproblematic, although it should be noted that the relative consistency of the estimates of the total shares does mask some substantial effective re-assignment of expenditures between the two non-health areas, particularly in the case of Finland, and even more so in that of Norway. The discrepancies in the total share in the case of Sweden and the UK, 6.5% points and 5% points respectively, are, however, even more disturbing.

In the case of Sweden, the discrepancy in the total share for 1980 stems almost completely from the massive revision of the estimate of the share of GDP devoted to (non-health) social expenditure on the non-aged, from the 6.12% implied by OECD (1985) to the 12.72% recorded in OECD (1994b). This might be attributable to a more complete consideration of benefits in kind, such as child care, in the data more recently prepared. In the case of the UK, the discrepancy in the total social expenditure shares for 1980 is attributable in fairly equal measure to the revision of the shares recorded for non-health expenditure on both the aged (from 6.66% to 9.17%) and non-aged (from 4.55% to 6.96%).

In the absence of further OECD assessment of the data published in OECD (1985), there is no alternative to a simple (multiplicative) splicing of the older sub-series onto the newer at 1980, despite the substantial discrepancies for 1980 for Sweden and the UK detailed above. It seems very likely that even this multiplicative procedure involves an overstatement of the share of GDP devoted to social expenditure on the non-aged and to all social protection in Sweden in earlier years, and to an overstatement in all series except the share of health in the case of the UK in earlier years. This overstatement will be more severe the more it is the case that the programmes which are considered in the more recent sub-series were not in operation in the years of the earlier sub-series. The very exclusion of these programmes in the preparation of the earlier data suggests that this overstatement may be substantial. In the case of Sweden, the well known fact that the massive expansion of public sector welfare employment dates from the mid-late 1970s underlines the strong possibility of a substantial overstatement of the welfare commitment to the non-aged in the 1960s in the series derived.

### **The alien labour force**

The table below presents an exhaustive list of the specific sources used in the derivation of series for the relative extent of the alien labour force for each of the eleven countries. Series for the non-naturalised migrant, i.e. alien, workforce were pieced together from these various sources. Except where italics are used, the figures taken from these sources were annotated as relating to the foreign labour force or foreign population, i.e. to non-naturalised migrants, or aliens. In the cases of many countries, it was necessary to turn to statistics on the foreign population in order to plug gaps in the series available for the foreign workforce. In each case the figures for population served as a check for the figures on the workforce. With regard to both workforce and population, moreover, the use of a variety of sources for each country serves as a check on the basis of the statistics cited in each source, and in particular allows an assessment of whether the figures cited in any particular source do indeed relate to non-naturalised migrants rather than to the foreign born, or perhaps even to the foreign born and their families.



| Country      | Foreign labour   | Foreign population  |
|--------------|--|---|
| France       | 1968 Castles & Kosack (1985, Table III/4)<br>1976-84 SOPEMI (1986, Table A.7)<br>1980-90 Salt et al (1990, Table 7.4)<br>1985-95 SOPEMI (1997, Table A5)   | 1958-72 Werner (1976, Table 4)<br>1960/1970/1975 Castles & Kosack (1985, Table 1)<br>1968 UN (1979, 9)<br>1968 UN (1979, 9)<br>1974 OECD (1978, Table 3)<br>1975 Eurostat (1989, Table I/4)<br>1976 King (1993, Table 2.2)<br>1975/1982 SOPEMI (1986, Table A.6)<br>1982/1985/1990 Salt et al (1994, Table 7.1)<br>1990 SOPEMI (1997, Table A1) |
| West Germany | 1959-72 Werner (1976, Table 3)<br>1954-92 (sic) Rudolph (1994, Table 6.3)<br>1976-84 SOPEMI (1986, Table A.7)<br>1985-95 SOPEMI (1997, Table A5)   | 1954-92 Rudolph (1994, Table 6.3)<br>1970 UN(1979)<br>1974 OECD (1978, Table 3)<br>1975-1984 SOPEMI (1986, Table A6)<br>1980-1991 Salt et al (1994, Table 7.1)<br>1970;1975;1980-7 Eurostat (1989, Table I/4)<br>1985-95 SOPEMI (1997, Table A1)  |
| Italy        | 1975 OECD (1993b, Table G.1)<br>1983 Eurostat (1989, Table III/6)<br>1990 Salt et al (1994, Table 7.4)   | 1980-91 Salt et al (1994, Table 7.1)<br>1985-95 SOPEMI (1997, Table A1)   |
| UK           | 1966/71 Werner (1976, Table 7)<br>1966 Castles & Kosack (1985, Table III/4)<br>1975/1980 OECD (1993b, Table G.1)<br>1976 OECD(1978, Table 4)<br>1979 ILO (1984, Table 4.1)<br>1983-85 Eurostat (1989, Table III/6)<br>1984-90 Salt et al (1994, Table 7.4)<br>1985-95 SOPEMI(1997, Table A5) | 1961/71/75 Castles & Kosack (1985, Table 1)<br>1971 UN (1979, Table 6)<br>1974 OECD (1978, Table 3)<br>1981-85 Eurostat (1989, Table I/4)<br>1984-91 Salt et al (1994, Table 7.1)<br>1985-97 SOPEMI (1997, Table A1)  |



|         |  |  |
|---------|--|--|
| Sweden  | 1961-73 Werner (1976, Table 8)<br>1973-1989 King (1993, Table 2.1)<br>1976-84 SOPEMI(1986, Table A.7)<br>1980-91 Salt et al (1994, Table 7.4)<br>1985-95 SOPEMI (1997, Table A5) | 1950/70/82/90 Stalker (1994, Tab 12.1)<br>1960/1970/1975 Castles & Kosack (1985, Table 1)<br>1970 UN(1979, 9)<br>1970 UN(1979, 9)<br>1970-77 Widgren (1979, Table 2.2)<br>1973-89 King (1993, Table 2.1)<br>1974 OECD (1978, Table 3)<br>1975-84 SOPEMI (1986, Table A.6)<br>1980-91 Salt et al (1994, Table 7.1)<br>1985-95 SOPEMI (1997, Table A1) |
| Austria | 1962-92 Fassmann & Münz (1994, Tab 8.2)<br>1976-84 SOPEMI (1986, Table A.7)<br>1970-95 OECD (1997a)<br>1985-95 SOPEMI (1997, Table A5)   | 1950/70/82/90 Stalker (1994, Table 12.1)<br>1971 UN (1979, Table 6)<br>1980-91 Salt et al (1994, Table 7.1)<br>1985-95 SOPEMI (1997, Table A1)   |
| Norway  | 1988-95 SOPEMI (1997, Table A5)<br>1990 Salt et al (1994, Table 7.4)   | 1950/70/82/90 Stalker (1994, Table 12.1)<br>1977 Nordic Council of Ministers (1978, Tables 12&13)<br>1980-91 Salt et al (1994, Table 7.1)<br>1985-95 SOPEMI (1997, Table A1)   |
| Finland | 1992 Salt et al (1994, Table 7.4)  | 1950/70/82/90 Stalker (1994, Table 12.1)<br>1970 UN (1979, Table 6)<br>1977 Nordic Council of Ministers (1978, Tables 12&13)<br>1980-91 Salt et al (1994, Table 7.1)<br>1985-95 SOPEMI (1997, Table A1)  |
| US      | 1970/80 OECD (1991, Tab2.3B)   | 1970 UN (1979, 9)<br>1970 UN (1979, 9)<br>1970/80/90 SOPEMI (1997, Table C1)   |
| Canada  | 1971/81/86 OECD (1991, Tab2.3B)  | 1961 Statistics Canada (1972, p236)<br>1971 UN (1979, Table 6)<br>1986 Statistics Canada(1990, 2-17)<br>1981/86/91 SOPEMI(1997, Table C1)  |
| Japan   | -  | 1970 UN (1979, Table 6)<br>1960/70/80/85/89 Cohen (1995, 372)<br>1985-95 SOPEMI (1997, Table A1)   |

Key aspects of the procedure by which the series for the alien workforce were derived for each country are given below. In each case, the figures on the extent of the total labour force with which the series for the proportion of aliens in the labour force were derived were taken from standard sources, typically OECD.

For France, statistics on the extent of the alien labour force are unavailable over 1960-75. For 1960-7 the figures are estimated by assuming a constant growth rate of the alien labour force of 2% per annum over 1960-7. This annual rate generates the sort of alien labour force growth over 1960-8 which is implied by the 41% growth in the alien population over the period 1960-8 together with the evidence from the period after 1968 that the alien labour force tended to grow at a rate between one third and one half of that at which the alien population grew. For 1969-75, the ratio of growth in alien labour force to that of alien population over period 1968-1976 was used to estimate annual growth rates of alien LF from annual data on alien population for each year. Statistics on the magnitude of the alien labour force are available from 1976 on.



For West, latterly western, Germany, figures for the alien labour force are available all through. Total labour force figures 1991-5 for Western Germany are taken from BLS (1996b).

In the case of Italy, figures for the alien labour force are only sporadically available. Before 1980, the only available figures for foreign population is that for 1950. As far as the proportion of aliens in the population is concerned, figures for 1960 and 1970 are estimated from the trend apparent from the statistics for 1950 and 1980, with the gaps filled by interpolation. The proportion of aliens in the labour force was then estimated on the basis of the most recent data, the 1990 benchmark, suggesting that aliens constitute similar proportions of the population and of the labour force (earlier data has hugely varying implications in regard to this relation). In any case, the number of aliens historically present in Italy is very small.

In the case of the UK, figures for the alien labour force are not available until 1975, and then only sporadically until 1983. Alien labour force estimates 1960-75 were constructed using the fragmentary data available on the foreign born labour force, on the foreign born population and on the foreign born population and their children, over 1960-75, together with the data on the alien labour force available from 1975. The gaps left in the period 1975-83 were filled by interpolation.

For Sweden, figures on the alien labour force are available all through 1960-95.

In the case of Austria, statistics on the magnitude of the alien labour force are available over 1962-1995. The figures for 1960-1 were estimated from the growth of the early 1960s. The size of the total labour force in 1973-4 and 1995 does not feature in OECD labour force statistics, and was estimated by interpolation.

In the case of Norway, figures for alien labour force are available only from 1988, and continuous series for the alien population available only from 1980. The proportion of aliens in the population in 1960 was estimated at 1% on the basis of data for 1950 (0.5%) and 1970 (2%), which suggest a doubling of the proportion every 10 years in the period 1950-70. The alien population figure for 1980 suggests that alien population was then stable over 1970-80. The evolution of the alien labour force then estimated from the ratio of proportion of aliens in labour force to that in population from the later 1980s since when figures on the former are available.

For Finland, the figures for the alien labour force are available only for 1992. These suggest that the proportion of aliens in the labour force is roughly equal to the proportion of aliens in the population in this year. However, only sporadic figures on the % alien population are available until 1980. The population figure for 1960 was estimated based on the trend apparent from the benchmark data available for 1950 and 1970, and the gaps filled by interpolation. This series was then taken as the series for the proportion of aliens in the labour force, a treatment quite reasonable in the light of the general nature of the relation between these aggregate proportions apparent internationally.

For the US, the proportion of population foreign is estimated from benchmarks. The figure for 1960 is estimated on the basis of the relation of % of population foreign born in 1980 to that in 1970, together with the similarity of total immigration over the 1970s and 1960s evidenced by Potts (1990, Table 1). The proportion of aliens in the labour force is estimated by interpolating the % of the population foreign, a proportion which the available snapshots suggest parallels that of the foreign labour force quite closely, and assuming that the proportion of foreign born who are alien apparent in 1970 was constant throughout the period.

For Canada, benchmarks on the proportion of aliens in the population is available for 1971, 1981, 1986 from Statistics Canada (1972, 236; 1990, 2-17). The proportion of aliens in the labour force is estimated on the basis of the % of population alien in 1961 and 1986,



on the ratio of the alien to the foreign born population in 1986, and on the ratio of the foreign born population to the foreign born LF evidenced by the various snapshots. This proportion is thus estimated at a constant level all through the thirty odd years spanned by the present study.

For Japan, the proportion of aliens in the labour force is unavailable for any year. In the absence of any figures at all on the 'stock' of aliens, who are principally Koreans, as a proportion of the labour force, it is assumed that this proportion is equal to that of aliens in the population as it is interpolated from the published benchmarks 1960, 1970, 1980, and the series 1985-95.

## **Profitability**

Profits may be measured in a number of ways. The notion most popular in media discussions seems that of the rate of profit, the rate of return made on capital. At the current level of aggregation, however, there are very real difficulties in the construction of net capital stock series central to the derivation of profit rates for the purpose of cross-national comparative work (Glyn, 1997). Differing assumptions about asset lives, and thus about the depreciation of the capital stock, are made in different countries. This study avoids these problems by taking the gross share of profits in value added as the indicator of profitability, where this is at all possible. No assumptions about asset lives bear on such series. Moreover, the measures of profitability used here seek to take account of the work-related income of manufacturings' self-employed by imputing them an income based on the average earnings of employees in manufacturing. The series for profit share thus derived do thus express as far as is possible the relative extent of the pure surplus generated.

The principal source for the series used here are the statistics on gross profit share presented in Glyn (1997), which are themselves the result of a careful collation of statistics from the OECD and from national sources. In the case of each nation, this data needed to be complemented in some way with figures from alternative sources, although in most cases this was simply a matter of extending Glyn's (1997) series (through splicing) by a couple of years from the early-mid 1990s at which they tend to peter out to the final year covered by this study, 1995. Account was taken in such extensions of the developments in manufacturing self-employment implied by OECD and BLS (1996b) labour force series.

The series for Canada was extended with profit shares derived from UNIDO data. That for Finland was extended with more recently published OECD data on gross profit share. The series for France was extended according to the movement of OECD data on the gross profit in non-financial private enterprise. The series for West Germany was completed with unpublished shares derived by Wendy Carlin and Andrew Glyn from domestic sources. The data for Italy was extended with OECD figures on profit share in manufacturing and mining. The series for Japan was completed with OECD data. Profit share in Norway was estimated for the mid-1990s from OECD statistics on the profitability of the business sector. The series for Sweden was completed with the help of the UNIDO data. The series for the UK was completed with recently published OECD figures. The entire series for the US was taken from the unpublished derivations of Robert Brennan, whose estimates of manufacturing profit share draw on recent revisions of factor incomes published by the US government. These shares are in any case very similar to those presented in Glyn (1997), for the overlap years to 1993.

By far the most problematic series is that for Austria, which involves heavy estimation. A series was pieced together from the series on factor shares in manufacturing available from UNIDO and from the figures for the early 1960s on the share of profit in the national income implied by the wage share series presented in Traxler (1992, Table 8.3).



Account was also taken of developments in self-employment. Finally, the comparative level of profit share in manufacturing was fixed with reference to OECD statistics on the comparative profit share in the business sector as a whole. This suggested that during the period from the mid-1980s to the mid-1990s for which the figures for Austria are available, corporate profit share there stood at a very similar level to that in France. Thus, the series for manufacturing profit share in Austria is adjusted such that it showed similar profitability from the second half of the 1980s as does Glyn's (1997) series for French manufacturing.

### **Rate of accumulation in manufacturing.**

Data for the rate of investment in manufacturing, expressed as a proportion of the existing capital stock, were derived from a number of sources. This data, showing the rate of accumulation of capital in manufacturing, show the extent of new investment in plant and equipment relative to the existing base. The data can be derived from the macro-economic aggregates presented in international sources. The data was derived principally from figures on the gross capital stock in manufacturing at constant prices, though estimated from other series where necessary. Following Glyn (1997), the use of gross rather than net capital stock was favoured, in the light of the cross-border differences in the treatment of asset lives and capital depreciation (see also Armstrong et al, 1991, 346-347).

The principal source of the manufacturing gross capital stock series was the OECD's (1997) *Flows and Stocks of Fixed Capital 1970-1995*, the OECD's (1987) *Flows and Stocks of Fixed Capital 1960-1985* and the 1997 version of the OECD Statistical Compendium database. The figures for gross capital stock in manufacturing presented in the tables of Armstrong, Glyn and Harrison (1991) and Glyn (1997) were used as a supplementary source. For some years in the cases of some nations, however, and indeed for all years in the case of Austria, the data was estimated on the basis of an OECD volume measure of the capital stock of the business sector in its entirety, available on the OECD database. Where possible, the validity of any projection was assessed using alternative figures for overlap years in the sources.

In the cases of West Germany, Canada, Finland and Sweden, the derivation of the manufacturing rate of accumulation was straightforward, with all the necessary figures for manufacturing capital stock presented in the OECD sources.

For France, the manufacturing capital stock over 1960-9 was projected back from OECD statistics with the aid of Armstrong et al (1991, Table A5), which describes movements in the gross stock almost identical to those suggested by the OECD (1997a) over the sources overlap years 1970-90.

For the UK, the manufacturing gross capital stock for 1992-5 was projected forward with the OECD's (1997a) gauge of the capital stock of business, the percentage changes in which have a fairly close relation to the proportionate changes in the OECD's gross manufacturing capital stock at constant prices over the overlap 1981-91. A similar procedure was adopted for the period 1994-5 in the case of the United States, and for 1995 alone in the case of Japan, with the same check on the movements of the alternative series over their overlap providing reassurance about the validity of the procedure.

For Italy, the construction of the data was quite problematic, with the available OECD figures tending to be inconsistent and/or untenable over time. For the period 1960-90 the figures for the gross fixed capital stock in manufacturing at 1980 PPP dollars published in Armstrong et al (1991, Table A5) were taken as data. This series was extended using the series for the gross capital stock of manufacturing and mining at 1990 prices published in the OECD (1997) *Flows and Stocks of Fixed Capital*, on the basis of a constant relation, with almost perfect correlation, between these series over their overlap 1980-90.



For Norway, over 1960-90, the figures for the net manufacturing capital stock at constant prices presented on the OECD database were taken as data, in the absence of any alternative. This series was extended over 1991-5 with the use of the OECD's gauge of business capital on the basis of the relation over 1981-90 of the annual percentage change in the net manufacturing stock to that of the business capital stock.

For Austria, the entire series for gross capital stock in manufacturing at constant prices was estimated from other sources. The data was projected from the OECD gauge of the capital stock of business, with reference to the general relation of this series to those for the gross stock of manufacturing shown in Armstrong et al (1991, Tables A5 & A6) and Glyn (1997, Tables 6 & A4). With particular reference made to the West German experience, the manufacturing capital stock at constant prices was assumed to grow at the same rate as the business capital stock over 1960-73, and at two-thirds of this rate thereafter.

### **Product market pressure.**

The indicator of demand conditions employed in the panel econometric investigation here is the percentage change in the volume of final domestic demand, a series readily available from the OECD (1997a) (Economic Outlook section). This data relates quite poorly to the capacity utilisation series for those nations for which the latter is available (Artus, 1987), with cross-sectional and time series correlations rarely exceeding 0.5. The demand variable is thus a rather poor indicator of the pressure of orders.

### **Open unemployment**

For eight of the eleven countries whose experience with regard to working conditions is under scrutiny here; Canada, West Germany, France, Japan, Sweden, the UK and the US, the key source was the US Department of Labour Bureau of Labour Statistics' (BLS, 1996b) statistical mimeo. The BLS is widely respected for its sophisticated handling of published and unpublished national statistics. In any case, BLS figures are broadly comparable with OECD estimates for those countries for which both are available. The statistics presented in the key BLS source demonstrate the limits of the efforts of international statistical agencies' efforts at standardisation of national rates of open unemployment. In the case of Italy, for example, the gradual improvement from 1986 onwards in the detail available from domestic sources on those without work results in the attribution of substantial additional unemployment by the BLS above and beyond the rate derived for purposes of comparison from the less sophisticated breakdown employed exclusively in the earlier national materials. This is one of a number of indications that the adjustments the BLS makes to national statistics tend to be rather conservative, erring on the side of caution in the extent of any correction. The political difficulty which would result from doing otherwise imply that those national governments more ruthless in their approach to their domestic measurement of unemployment may well see benefits in the standardised rates published by the international agencies.

In the case of Italy, the BLS series on the rate of unemployment is fractured in a couple of places from the early 1980s, although overlapping figures on the differing bases are presented. The BLS rates for the most recent years, which the BLS regards as the best guide to open unemployment on its own definition, were simply used to inflate the earlier figures appropriately. This brings the earlier rates much better into line with the standardised rates derived by the OECD's (1997f) Historical Statistics 1960-1995.



In the case of Sweden, there seems an obvious problem with the BLS series in the 1990s, requiring its supplementing by the alternative OECD source. From 1991, as Swedish unemployment worsened, BLS rates began to diverge from the OECD rates to which they had been closely allied. This is apparently due to the inclusion in recent BLS rates for Sweden of an allowance for the unemployment of students looking for work; an adjustment exceptional in attempts to secure international comparability of unemployment rates. Thus OECD (1997f), showing lower rates, was taken for 1991-5. By the mid-1990s, the rates carried by OECD (1997f) are some 1.5% points lower, with the OECD's 7.7% for 1995 comparing with the 9.1% figure of the BLS.

BLS (1996b) features no labour force statistics for Austria, Finland or Norway. The standardised rates taken for these countries are taken exclusively from various OECD sources. The principal sources are the OECD (1997f), the OECD and the OECD's Labour Force Statistics 1962-1982. These are variously supplemented by other OECD sources, and particularly the OECD statistical database, where there are gaps and omissions.

In the case of Austria, the rates for 1961 and 1962 are estimated from the domestic rate featured in the OECD database. This involved a deflation of the domestic rate, based on the ratio of domestic to OECD rates in the surrounding years 1960 and 1963 for which OECD data is available. In the case of Finland, the rates for 1961 and 1962 are taken from Statistics Finland (quarterly) data cited in the OECD database. This apparently domestic series is consistent with the OECD standardized rates in the surrounding years 1960 and 1963 for which OECD data is available.

In the case of Norway the obvious problems are more numerous. Figures were taken from the OECD's (1997b) and from the OECD (1997a) database, with which the former rates are consistent for the overlap years. The rates for the earlier years taken from the database exceed those shown in the earlier OECD Labour Force Statistics (e.g. OECD Labour Force Statistics 1962-82), but are consistent with those shown in Ferner & Hyman (1992) as taken from various OECD sources. There is no evidence in the numbers of unemployed registered shown in the database for the kind of jump in the rate of unemployment in 1972 suggested by, for example, the OECD's Labour Force Statistics 1962-82 and OECD (1997f). The rates for 1960-3 are estimated from figures on the number of registered unemployed cited in the OECD database.

### **The rate of employment**

The figures for the rate of employment are derived from statistics featuring in the OECD (1997a) Statistical Compendium on total employment and on the extent of the population of working age. The statistics featuring on the database are troublesome only for West(ern) Germany. Beginning with the figures from the early 1990s, the OECD starts to present statistics relating to the territory of the new Germany. Benchmarks relating to Western Germany are however available for 1992 in the OECD's Labour Force Statistics 1972-92, allowing extrapolation of the figures for Western Germany from the labour force statistics pertaining to the entire nation which are all that are available for 1991 and 1993-1995.

### **Manufacturing employment**

Manufacturing employment totals were taken principally from BLS (1996b). This carries annual figures for the number employed in manufacturing from 1970 onwards along with benchmark counts for 1960 and 1965. It also features an index of manufacturing employment from 1960, although, for reasons very difficult to fathom, movements in these



indices often do not correspond well with movements in the raw numbers employed. This source was complemented with OECD sources, particularly in the cases of Norway, Austria and Finland, for which the BLS does not carry any statistics.

In the case of the US figures for manufacturing employment from 1970 on were taken from BLS (1996b). These were extrapolated back with statistics on manufacturing employment for 1960-1970 from the OECD (1997a) Statistical Compendium database. The resulting figures for 1960-1970 are more closely in line with the available BLS benchmark counts for 1960 and 1965 than would be a backward projection making use of the BLS index of manufacturing employment which is available for 1960 on.

In the cases of Canada, Japan, the UK and France, the BLS figures are unproblematic. BLS (1996b) figures for manufacturing employment from 1970 on were extrapolated backwards using the BLS index for 1960-70. This procedure results in figures over 1960-70 very closely in line with the the BLS benchmarks for 1960 and 1965.

In the case of West(ern) Germany, annual figures for manufacturing employment are presented in BLS (1996b) only for 1980 on, with benchmarks presented for 1960, 1965 and 1970. Backwards extrapolation using the BLS index of manufacturing employment results in substantial discrepancies from these benchmarks. The figures for 1960-1980 were thus projected back using figures from the OECD database, yielding statistics for this period corresponding closely with the BLS benchmarks. Figures for 1994-5 were projected forwarded from the BLS estimated counts, which were available only to 1993, using the BLS index of manufacturing employment in the Western part of the new Germany.

The derivation of a series for manufacturing employment in Italy is problematic, with the statistics available for the earlier years of the period spanned by this study tending to be fragmentary. The BLS series for manufacturing employment from 1970 on was simply extrapolated backwards for 1960-1970 using the BLS index, which in the case of Italy related only to employees in manufacturing. Statistics on manufacturing employment and manufacturing wage and salary earners available in the OECD Statistical Compendium database suggest that the role of self-employment in manufacturing changed little in this period. However, the figures for 1960-70 resulting from backward extrapolation with the BLS index suggest a rapid growth in manufacturing employment over 1960-65 which is not consistent with the stability shown over the BLS benchmarks for 1960 and 1965. The series derived may thus overstate the growth of manufacturing employment from the start of the 1960s to the mid-1960s, and thus understate the level of manufacturing employment in the earliest years of the 1960s. A further worry is that from 1991 the index of employees shows a sharp fall not reflected in the count of employment, which does not seem attributable to the break in the basis of the numbers in employment series noted by the BLS. Moreover, statistics from the OECD Statistical Compendium suggest that the role of self-employment in manufacturing was diminishing quite rapidly at this time, a development inconsistent with the widening discrepancy between movements in employment and the number of wage and salary earners suggested by the BLS statistics.

In the case of Sweden figures for manufacturing employment from 1970 on were taken from BLS (1996b). These were extrapolated back with statistics on the numbers of industrial wage and salary earners for 1963-1970 from the OECD database. The BLS index of manufacturing employment was used to complete the backward extrapolation to 1960. The resulting figures for 1960-1970 are closely in line with the available BLS benchmark counts for 1960 and 1965, much more so than would be a backward projection making use of the BLS index of manufacturing employment which is available for 1960-1970 in its entirety.

Figures for Austria are principally from OECD Labour Force Statistics, 1962-82 and 1976-96. The numbers employed in manufacturing over the period 1960-1968, for which



these sources do not feature statistics, are extrapolated backwards from statistics on employment in mining and manufacturing featured in the OECD Statistical Compendium database. The figure for 1995 is projected forward using the same statistics.

Statistics on manufacturing employment in Finland were taken from the Finnish national accounts. They correspond reasonably closely with the figures available from 1976, sporadically at first, in OECD sources.

For Norway, the OECD labour force statistics offer an almost complete series for manufacturing employment. The figures for 1960-1 were extrapolated backwards from OECD statistical compendium figures on the numbers of manufacturing employees, whilst a gap in the series at 1971 was plugged using UNIDO figures.

### **Civilian employment**

The principal source for statistics on civilian employment is BLS (1996b). This furnishes civilian employment totals through 1960-1995 for all nations except Austria, Finland and Norway. Statistics for these countries are pieced together from published OECD labour force statistics, which feature some Secretariat estimates not closely based on national sources. The resulting series for these three countries are highly consistent with the more complete series which feature in the OECD Statistical Compendium, which thus seem to rely on similar splicing procedures to those employed here.

In the case of Austria, the OECD publishes the same series for civilian employment as it does for total employment, suggesting negligible armed forces. Civilian employment in 1995 is estimated to be almost equal to that in 1994 on the basis of the offsetting movements in the participation and unemployment rates over 1994-5 evidenced in the OECD (1997b) Labour Force Statistics 1976-96 Part III, and the very slow growth of the total population evidenced over 1994-5 in Part I (Table 1.0), and of the working population over 1993-4 (Table 2.0).

In the case of Finland, figures on civilian employment are available in OECD labour force sources only from 1975. The statistics for the years 1960-74 were extrapolated backwards from OECD statistics on total employment, which are a little higher as one would expect.

A series for civilian employment in Norway can be put together from OECD labour force sources without obvious problems.

### **Openness to trade.**

Series for the openness to trade; the share of exports plus imports in GDP, were derived unproblematically from the OECD (1997a) Statistical Compendium.



Table 15. Panel analysis: summary statistics

| Variable    | Obs | Mean      | Std. Dev. | Min   | Max   |
|-------------|-----|-----------|-----------|-------|-------|
| -----+----- |     |           |           |       |       |
| injinc      | 396 | 7.168182  | 3.908433  | 1.2   | 25    |
| hours       | 396 | 1835.803  | 189.7102  | 1453  | 2483  |
| union       | 396 | 42.67955  | 17.49064  | 9.7   | 85.3  |
| mfgsh       | 396 | 25.18712  | 5.211439  | 14.5  | 39.8  |
| aliens      | 396 | 3.321641  | 2.484822  | 0     | 9.5   |
| profit      | 396 | 28.98611  | 6.460092  | 10.7  | 49.8  |
| accumn      | 396 | 3.934091  | 2.834806  | -.3   | 19    |
| demand      | 396 | 3.327273  | 2.861382  | -7    | 12    |
| empt        | 396 | 67.33056  | 5.943664  | 52.5  | 81.7  |
| unempt      | 396 | 4.683081  | 3.209936  | .3    | 18.2  |
| iloss       | 396 | 17.51212  | 6.960191  | 4.6   | 39.2  |
| oecdss      | 396 | 19.15523  | 7.090537  | 3.55  | 37.36 |
| nhsss       | 396 | 4.981919  | 1.536293  | .4    | 8.85  |
| agedss      | 396 | 7.595985  | 3.794208  | .89   | 16.78 |
| restss      | 396 | 6.541944  | 3.841986  | .27   | 21.2  |
| aged        | 396 | 12.4904   | 2.695493  | 6     | 17.8  |
| trade       | 396 | 0.4618409 | 0.1840841 | 0.094 | 0.869 |



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<sup>i</sup> Interestingly, this suggests the sense in which Hyman's (1987, 30) characterisation of employers' individual strategic choice as being a choice between 'different routes to partial failure' is misleading, or at least collapses together levels of analysis which might be better kept distinct. An agent's strategy cannot inescapably fail unless we regard the context in which it is forged, that left untouched by it which precipitates undesirable consequences, as being as readily subject to an agent's action as are the avenues which the agent's strategy pursues.

<sup>ii</sup> Franzosi (1995), in his monumental study of industrial conflict in Italy in the period 1950-78, concedes the weaknesses of his prediction of a global strike wave in the early twenty-first century from, as he puts it, 'one data point', the Italian 'autunno caldo' of 1969, which occurred some 50 years after the social conflicts of post-World War I Italy.

<sup>iii</sup> Whilst there are several social security regimes in many of the countries where fatality figures are derived from social insurance records, this does not complicate the derivation of death tolls for the manufacturing sector, whose employees tend to fall under the ambit of one regime. For example, the 21% of French employees who in the early 1980s were covered by regimes other than the general regime worked in non-manufacturing activities such as agriculture, the mines, public administration and the civil service (European Foundation, 1986, 3).

<sup>iv</sup> From personal correspondence with Henrik Nordin of the Swedish National Board of Occupational Safety and Health (Arbetarskyddsstyrelsen), 23/1/98.

<sup>v</sup> The European Foundation for Living and Working Conditions (1986) reports that aside from exclusion of all road traffic death at least some deaths in, for example, the railways, are not notifiable to the HSE, being reported under separate systems.

<sup>vi</sup> From personal correspondence with Henrik Nordin of Arbetarskyddsstyrelsen, the Swedish National Board of Occupational Safety and Health 23/1/98.

<sup>vii</sup> A conservative allowance is made for self-employment.

<sup>viii</sup> Even with an allowance of 10000 for the self-employed, giving 770000 thousand total employed.

<sup>ix</sup> The CFOI allows a still finer treatment of fatal injury in these heaviest activities. The breakdown presented allows the identification of deaths in 'iron and steel' as this is commonly understood, for example by the European Coal and Steel Community (see e.g. Eurostat, 1973). Essentially this involves excluding those deaths in non-ferrous metals listed under the primary metal branch in the results of the CFOI (1998, Table A-5). Using UNIDO figures on US employment in ISIC 371 (Iron and steel), an incidence rate for these specific activities may be derived, though it should be regarded with some caution. The procedure suggests that in iron and steel activities, accounting for around 2% of total manufacturing employment in the US at this time, the rate of fatality may have been three times that for manufacturing as a whole.

<sup>x</sup> A crude four fold division of the injury experience in the Finnish manufacturing and mining in 1975 shows that the rate of frequency of fatalities in the wood and paper based manufacture was greater than that in each of the other three divisions, exceeding even that in the extractive and metal based division (Statistical Yearbook of Finland 1977, Table 291). This was not sustained into 1976, however, when the extractive and metal based industries were by far the most perilous, and when indeed the rate of frequency of fatality in the wood and paper based industries ranked third of the four divisions, exceeding only that in the manufacture of consumer articles. But the nature of the aggregation of this 1970s data makes it no more than faintly suggestive.

<sup>xi</sup> This may be partly a result of the HSE not taking account of the large numbers insured to work on a self-employed basis in agriculture who work occasionally as seasonal or part-time labourers whilst simultaneously insured to perform the jobs in industry which provide their main source of income. Moreover, it seems certain that the employment totals derived by the HSE from the BG include workers with experience across the full gamut of industries who are insured but completely without work.



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<sup>xii</sup> This conclusion seems all the more valid for the years before 1987 for which the rates derived for the present study fell below those published for West Germany in the ILO Yearbooks, apparently as a result of the method used here to project the relevant labour force. This method seems thus to have overestimated the relevant labour force in earlier years, an overestimate which would help to correct for any latent accentuation of the rate derived in earlier years by the greater employment in quarrying relative to that in the services.

<sup>xiii</sup> Wokutch's (1990, Table 5.2) annual figures on fatality in West German manufacturing for 1979-85 are purported to be adjusted for commuter death by deflating the series published by the ILO according to the proportion of all fatalities across the whole economy recorded as resulting from commuter injury (see Wokutch, 1990, 158). Wokutch (1990, 158) cites the Hauptverband der gewerblichen Berufsgenossenschaften's *Arbeitsunfallstatistik für die Praxis* as his source. Comparing the rates for manufacturing derived by Wokutch to the original ILO series from which they are derived, it appears that commuter death consistently accounted for 36%-39% of fatalities across the whole economy in this 7 year period, with no sign of any trend in this pretty constant proportion averaging about 38% over this short span of years. In contrast, Der Bundesminister (1986; 1987) present figures suggesting that commuter death accounts for 29% (831 of 2834 deaths) and 34% (978 of 2896 deaths) of all deaths from fatal injury (excluding occupational disease) recorded across all industries in the years 1984 and 1985 respectively. For the previous decade, Der Bundesminister (1977) suggests 30% commuter death across all BG, across the whole economy 1975-1976. Similarly, the HSE (1991) report suggests that they accounted for 32% (775 of 2360) of all fatal injuries in 1988. Thus Wokutch's (1990) adjustment seems well in excess of that warranted by statistics relating to the extent of commuter death across the economy as a whole, on the experience of which he claims to have drawn. It may be that Wokutch (1990), unintentionally, adjusted the ILO data, which already exclude the (relatively few) deaths acknowledged to have resulted from occupational disease, not only for commuter death but for other deaths not resulting from work injuries, i.e. in effect deducted deaths from occupational disease twice from the total number of recognised occupational fatalities of all kinds. Such action would account for a discrepancy of the sort of magnitude implied for the years 1984 and 1985 (see Der Bundesminister, 1986; 1987).

<sup>xiv</sup> There is no evidence of a trend over time in the proportion, only of a tendency for commuter death to account for a greater proportion of recorded fatalities in the first half of the year (around 45%), and a lesser in the second half (around 40%).

<sup>xv</sup> If the increase in the number of fatalities recorded in 1992, sustained through 1993, is related to the extension of the occupational injury insurance to the Neue Lander, it does not reflect this extension in any straightforward way. The Statistisches Bundesamt (1997) shows the total toll declining rapidly over 1993-5 back to the sorts of level evidenced in earlier issues for the former West Germany in 1990 and for unified Germany in 1991. It may be that the collation of figures on fatalities in the Neue Lander developed more slowly than that on all injuries, so that the figures for 1991 reflect rather little of the East's fatality experience, perhaps particularly with regard to commuter deaths or deaths from occupational disease, with a rather more complete picture emerging for the following years.

<sup>xvi</sup> Presuming the peculiar labour force figure quoted by the HSE for 1988 (see above) is disregarded as a typo.

<sup>xvii</sup> Interestingly, the inclusion of the extraction of oil and gas in Branch 04 Chemicals does not seem of parallel relevance. Although there were 55 deaths in Branch 04 in 1972, the rate of incidence was only a little above that of approached that in manufacturing in general, perhaps because of the limited extraction of oil and gas in France.

<sup>xviii</sup> Occupational breakdowns of the injured are rarely available. In Great Britain over the financial year 1988/9 some 85% of the fatal injuries reported to the HSE's factory and agricultural inspectorates were sustained by blue-collar workers (HSE, 1991, 66-7). Recent figures for the US provides a very detailed breakdown of the fatally injured by occupation. The deaths of 'executive, administrative and managerial' employees accounted for 7% of all fatal injuries in both years 1992 and 1993, with these deaths occurring at about half the incidence rate experienced across the entire occupational structure (Toscano & Windau, 1993, Table 5; 1994, 19). The statistics for 1993 show that 37% of these deaths are murders or suicides and a further 35% result from transport incidents (Toscano & Windau, 1994, Table 2). Deaths amongst professionals are still less common than they are amongst the managerial group, with the two groups together accounting for around 10% of all fatal injuries (Toscano & Windau, 1993, Table 5; 1994, Table 2).



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Thus the most detailed figures available, that for the US in recent years, confirms the impression given by other more fragmentary sources that whilst some fatal injuries are sustained by the management employees, and indeed some by professional, it is clear that the vast bulk are sustained by other employees. Moreover, the US data suggests that clerical employees accounted for only around 2% of all occupational fatalities in the early 1990s, at a rate of incidence of fatal injury much below that even for managerial staff, amounting to one fifth of the incidence rate across the occupational structure as a whole (BLS, 1993, 44: Tab 5; BLS, 1995, 20: Tab 2). These figures suggest that it is the production and production related employees who dominate the work fatality counts of the industrial world.

<sup>xix</sup> It may well also be that any inflation of the severity of the experience involved in the treatment of Italian statistics may in part correct the understatement implied by the exclusion of the injury experience of some white collar employees from Italian injury records.

<sup>xx</sup> The HSE records deaths of employees, the self-employed and members of the public, with the figures for each of these categories usually presented separately (e.g. HSC, 1994, 6). Employees accounted for over 90% of all recorded fatalities in manufacturing defined under the SIC 1980 over the period 1981-1992/3 (from HSC, 1994, Table 2). Tombs (1999) suggests that the record of work related death amongst employees may be more complete than that amongst the self-employed and members of the public.

<sup>xxi</sup> The treatment of mineral extraction in Britain, where the activity features a relatively large death toll, changed in the early 1980s, with a substantial impact on the official rate for manufacturing published domestically. Nichols (1990, 337) reports that the HSE first presented manufacturing figures on the British 1980 Standard Industrial Classification (SIC) for 1981. This involved the inclusion of class 21/23 - 'Quarrying' - raising the official manufacturing incidence rate by almost 10%. SIC class 21/23, officially 'extraction and preparation of metalliferous ores', even now remains the most perilous class within manufacturing considered broadly as SIC branches 2-4. Some 42 deaths were suffered over the period 1986/7-1990/1 at an incidence rate of 23.4 per 100000 employees, a rate more than ten times the incidence rate of around 2 per 100000 recorded across SIC 2-4 as a whole in this period (Department of Employment, 1992, Fig 1). As Nichols (1997, 202) argues, the inclusion of quarrying activity as an aspect of manufacturing has the effect not only of raising the level of fatalities recorded for manufacturing, but, in the context of shrinking quarrying employment, of exaggerating the rapidity of the fall in the rate of fatal injury incidence in what is taken as the manufacturing sector. Comparison with the figures published in the ILO Yearbooks for British manufacturing shows that the HSE continued to exclude deaths occurring in quarrying from its submission on manufacturing fatalities even after the change in the national practice towards the inclusion of the activity as an aspect of manufacturing. In this instance, a change in national practice did not have implications for the ILO figures. The inclusion or exclusion of workers in quarrying in the series for manufacturing employees used in the construction of incidence rates is of little significance, since under SIC 1980 quarrying accounted for only around 1% of manufacturing employment even by 1981-5 (Nichols, 1997, 141).

<sup>xxii</sup> See the discussion of the extent of travel death during working time earlier in the chapter.

<sup>xxiii</sup> Relatedly, but perhaps still more worryingly, it seems that the LFS data for 1989/90 suggested that amputations and fractures - the more severe incidents within the major injury category - constituted slightly larger proportions of all non-fatal injuries than is suggested in the RIDDOR data for the same period, whilst more minor injuries such as strains and sprains constitute a smaller proportion in the LFS than the RIDDOR data (see HSC, 1991, Diagram 16). This evidence suggests that, if anything, the more severe non-fatal injuries are subject to even more extensive employer under-reporting under RIDDOR than are non-fatal injuries in general.

<sup>xxiv</sup> See also other comments of Nichols (1989, 543; 1994, 104).

<sup>xxv</sup> Goddard (1988) compares the incidence rate derived from data on fatal injuries collected by the Engineering Employers Federation (EEF) with that derived from the data on fatalities in engineering reported to the HSE. She finds that the two sources imply very similar fatality rates for engineering. On the face of it this seems reassuring, but the EEF data is itself of unknown validity and, moreover, covers only around 20% of the engineering workforce - a proportion too small for any firm conclusions about the comprehensiveness of the HSE fatality data, even in respect of the engineering branch of manufacturing, to be drawn. It is not inconceivable that the safety performance of members of the EEF is substantially better than that of engineering employers in general.



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<sup>xxvi</sup> In typical years road traffic death dominates total work related travel death, though of course this was not the case in 1994, the year of the sinking of the Estonia.

<sup>xxvii</sup> Interestingly, the rates derived through this procedure correspond exactly with the rates of fatal injury presented in the ILO Yearbook for the years 1975-1979, when the figures are presented to three decimal places.

<sup>xxviii</sup> Comparison of the sectoral breakdowns of occupational fatality presented in more recent issues of the SSB's Statistical Yearbook of Norway with those in the ILO Yearbooks shows that, quite generally, deaths in oil extraction (along with those in fishing in sealing) are excluded from the ILO figures. The ILO figures relate only to those activities falling under the auspices of the Norwegian Labour Inspection Authority, excluding deaths in the ambit of its sister agencies, the Norwegian Petroleum and Norwegian Maritime Directorates. This explains how it is the case, despite the close accord between the industrial classification typically employed in Norwegian decompositions and international standard industrial classifications noted by the OECD (1989), that the ILO sectoral breakdown does not feature an exceptional number of fatalities under ISIC Division 2, the extractive industries, for 1980. There is no evidence of a mistake, then, in the ILO figures.

<sup>xxix</sup> The Austrian system is thus similar to that in West Germany in this respect.

<sup>xxx</sup> Nor can any of the discrepancy be accounted for by the presence in the domestic source of deaths resulting from occupational disease, since these are clearly stated to be excluded from the statistics published.

<sup>xxxi</sup> Even when addressed repeatedly in German text prepared by a native speaker the Austrian body provided only one response, which dealt only with irrelevant issues (personal correspondence, 19/11/98).

<sup>xxxii</sup> The phraseology employed in connection with the domestically published figures demonstrates that they are based on the numbers of injuries which have been compensated, rather than those for which a claim has been made, and that it is these statistics which are submitted to the ILO (corroborated in personal correspondence (29/7/98) with Val Johnson of the AWCBC and further in that (of 28/8/98) from Christian Strano of HRDC). In some years, some WCB do not notify the AWCBC nor HRDC of the numbers of occupational fatalities compensated, in which case HRDC estimates the extent of work injury for the provinces or territories concerned (ILO, 1999).

<sup>xxxiii</sup> Until 1991 the Yukon was not party to Canada's NWISP, and compensated occupational fatalities occurring there were thus excluded from the published data (ILO, 1999). Provincial and territorial injury breakdowns (e.g. HRDC web page, 29/10/98) suggests that this omission has little significance for the consistency of the fatality series, since over the period 1992-6 only 0.5% of compensated fatalities across Canada as a whole occurred in the region.

<sup>xxxiv</sup> These breakdowns feature in various issues of the Statistics Canada Canada Yearbook.

<sup>xxxv</sup> This trend goes a little way to account for the internationally comparatively exceptional stability in the numbers of occupational fatalities recorded in Canadian official statistics

<sup>xxxvi</sup> Although it is not acknowledged by the ILO in their discussion of the figures published in the ILO Yearbooks for Canada, the manufacturing death tolls presented for the 1980s are fragmentary and, moreover, absurdly variable, even as between the tolls quoted for a single year in different ILO Yearbooks. There are thus no indications of consistency in the figures available on the numbers dying. Christian Strano of the HRDC (personal correspondence, 28/8/98) suggests that the inconsistencies of the tolls submitted by Canada in the 1980s may have been the result of differing methods of collation of the same raw WCB figures. Indeed, the figures presented in Statistics Canada's Canada Yearbook show some substantial revisions accompanied by confusing annotation.

<sup>xxxvii</sup> Despite the ostensible consideration of certain illness and disease in the fatality statistics derived by the BLS, it seems inconceivable that their estimates can reflect any number of deaths resulting from chronic illness rather than acute injury.



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<sup>xxxviii</sup> If there were any doubt remaining, the relative magnitude of the survey based fatality estimate in relation to the figure for acute fatal injury provided by the census confirms that very few, if any, deaths from occupational disease were reflected in the statistics derived from the sample surveys.

<sup>xxxix</sup> This is obviously preferable to the manufacturing employment data used by Wokutch (1990) in his derivation.

<sup>xi</sup> In effect, however, the backward projection from the CFOI evidence used to derive the US fatal injury incidence series for 1960-95 prepared for the present study glosses over the intricacies of such considerations. The procedure skirts the issue of the differential experience of employees in smaller workplaces, implicitly relying for its accuracy on an assumption that the proportion of all death contributed by very small establishments was unchanged over 1960-91. The comprehensive tabulations of the Bureau of the Census (1985, Table 1) feature some historical evidence which bears on the adequacy of this assumption. It shows that between 1958 and 1982 there was little change in the proportion of manufacturing establishments with 19 or fewer employees, with very close to one third of employees working in such establishments throughout the period. Moreover, whilst there was a substantial increase in the average number of employees per manufacturing establishment between the 1958 and 1967 censuses, there is no clear longer term trend, with the average by 1982 back down to 53, only a little above the 52.8 evidenced by the 1958 census. Whilst not conclusive, this census of production evidence does suggest it unlikely that there has been a pronounced, and still less a sustained, movement in the proportion of US manufacturing employees working in the critical establishments with fewer than 11 employees over the period under consideration. Although reliable historical evidence corroborating the absence of trend in the incidence differential between very small as opposed to larger manufacturing establishments hinted at by the table above over 1979-85 would be needed if we were to be certain, the available indications do thus suggest that the neglect of the evolution of the role of small establishments in occupational death introduces limited distortion in the fatal injury incidence time series.

The procedure also glosses over the experience of the self-employed, but it seems that the proportion self-employed in manufacturing is of little consequence for the incidence of fatal injuries in US manufacturing. Although there is clear evidence for the 1990s that across all activities the self-employed are more likely to suffer fatal injuries than employees (e.g. Personick & Windau, 1995, Tables 1&2; Department of Labor, 1998, Table C), the evidence available for manufacturing suggests that the self-employed constitute almost exactly the same proportion of those fatally injured as they do of sectoral employment, and thus that the rate of incidence amongst them is almost identical to that amongst employees (Personick & Windau, 1995, Table 3; Department of Labor, 1998, Table A-4).

<sup>xli</sup> With the numbers of family workers recorded falling very much in line with the numbers employed in agriculture and forestry since the mid-1960s, the figures suggest that the bulk of this group of Japanese employed excluded from the official statistics work outside the industrial sector.

<sup>xlii</sup> Wokutch (1990) derives a rate of 3.8/100000 using an inappropriate series for total manufacturing employment.

<sup>xliii</sup> This working year is itself consistent with that derived in the present study for all employees in manufacturing.

<sup>xliv</sup> The possibility that a number of deaths from occupational disease are included in the ILO data does remain however, to the extent that they feature in the vaguely defined categories highlighted in the discussion above. It may be that more such fatalities feature in the data for more recent years, although Wokutch (1992, 243n3) notes that relatively few work-related illnesses are recorded in Japan. Indeed, the ILO (1999) claims that deaths resulting from occupational disease are completely excluded in the statistics they cite.

<sup>xlv</sup> An alternative breakdown of the occupational deaths registered in 1994, however, shows that whilst only 14.4% had a 'vehicle' as their 'cause', a further 24.1% had 'motor-driven transport equipment' in this role (JISHA, 1996, Fig. 14). Within manufacturing, this categorisation shows 8.6% caused by a 'vehicle', with a further 20.8% caused by 'motor-driven transport equipment'. JSA (1975) shows that of the 4069 deaths in the fiscal year 1973 detailed (a total toll well below that featuring in the historical statistics), 207 (5.1%) were 'on road' and 118 (2.9%) 'other traffic' (presumably off-road - most are in construction), with these categories contributing 44 (4.6%) and 12 (1.3%) respectively of the 956 deaths in manufacturing.



<sup>xlvi</sup> The following table presents benchmarks for the death toll in manufacturing broken out in JSA (1987) and the ILO Yearbooks, sources which feature a total toll consistent with the historical data on the number of deaths across all industries presented in JISHA's Status Report 1996 (Fig. 1).

| Year | Manufacturing toll | Total toll |
|------|--------------------|------------|
| 1960 | 1160               | 6095       |
| 1965 | 1161               | 6046       |
| 1970 | 1400               | 6048       |
| 1975 | 856                | 3725       |
| 1980 | 589                | 3009       |
| 1985 | 475                | 2572       |
| 1990 | 442                | 2550       |
| 1995 | 412                | 2348       |

<sup>xlvii</sup> The impression that the facility is one owned by GM is reinforced by Wokutch's acknowledgement of the company in question's pre-war acquisition of a flagship plant through its purchase of a large German manufacturer, by his discussion of the Kenyan operations of the company, and indeed by the substantial evidence that the other US based multi-national with which he deals is Ford (Turner, 1991; Wokutch, 1990; Bloomfield, 1978).

<sup>xlviii</sup> The derivation of a rate of incidence of fatal injury per 1000 employed would, in the context of the shorter working hours, shift the position a little in favour of the German operations, but could hardly make good such a massive differential.

<sup>xlix</sup> The investigations dealt with establishments producing iron and steel products on ECSC definition, i.e. those producing crude steel, semi-products, hot-rolled finished products, continuously cast products, cold-rolled sheets and plates and cooked sheets (Eurostat, 1983).

<sup>i</sup> For the purposes of the studies 'accidents' at work are defined as those incidents which occur suddenly within the confines of the factory (i.e. 'dans l'enceinte de l'usine' (Eurostat, 1973, 127); 'nell'ambito dello stabilimento' (p. 135)) in connection with the work. The exclusion of commuter injuries (i.e. 'Wegeunfall' (p. 119); 'les accidents survenant sur le trajet du travail' (p127); 'gli infortuni che si verificano sul percorso del lavoro' (p135)) is explicitly noted. Suffering resulting from occupational diseases (i.e. 'Berufskrankheiten' (p. 119); 'les maladies professionnelles' (p. 127), 'le malattie professionali' (p. 135)) is not considered in the studies, though sudden and violent exposure to carbon dioxide is regarded as meeting the (acute) injury criteria implicit in the notion of an 'accident'. Eurostat (1986) notes that the fatality statistics relate to those deaths which occurred within 30 days of the injurious incident.

<sup>ii</sup> The rates of fatal injury derived are rates of frequency, per million hours worked, rather than rates of incidence, per 1000 exposed. If the rate of incidence were reported, i.e. the fatality rate was calculated on the basis of employment, the shorter hours worked in the Italian industry than in France and West Germany by the end of the 1960s would imply more favourable rates for Italy, although the comparative change would not be great - around 10%. Eurostat (1986) notes that whilst to 1976 the total hours statistics used in the derivation of frequency rates related only to manual workers, from 1977 the total hours of all employees was used, bringing a sharp fall in the rate derived and presented for each country. Whilst this complicates the tracking of the experience in any one country, this blanket change does not of course effect any assessment of the comparative safety performance of the iron and steel industries of the EC nations at any point in time.

<sup>iii</sup> Interestingly, Eurostat (1973) shows that whilst the proportion of foreign workers in iron and steel workforces was gradually declining in France over the period 1960-72, from 29.6% at the start of the period to 25.6% at the end, this proportion was growing rapidly in West Germany, from 1.8% in 1960 to 14.2% by 1972. Throughout the period, a negligible number of migrants worked in the Italian industry. The report notes that the rate of fatalities tends to be higher where more migrants are employed, and suggests that whilst this is in part the result of difficulties of cultural adaptation and of short tenure it is for the most part accounted for by the relatively heavy work which they do.

<sup>liii</sup> In the cases of France (1950-69) and Norway (1960-1) the series involves some projection of the hours of the self-employed on the basis of movements in the hours of employees.



<sup>liv</sup> The exception is Sweden. The two IW benchmarks suggest that annual working time in Sweden fell by some 188 hours over 1980-94, whilst the BLS index suggests that annual hours in Swedish manufacturing have risen from a low point in 1980, and quite sharply since 1992.

<sup>lv</sup> Eurostat (1989, Table III/8) allows the identification not only of sectoral employment, but of the numbers working in Metal Manufacturing (NACE 3) as opposed to Other Manufacturing Industries (NACE 4). Foreign workers in France and Germany not employed in manufacturing worked predominantly in Other Services (NACE 9), with a smaller proportion in Mineral Extraction and Chemicals (NACE 2).

<sup>lvi</sup> Some recent work suggests that the presence of migrant workers eased the general injury experience of indigenous employees at the height of West Germany's utilisation of migrants (Bauer et al, 1998). The study is based on micro data on the incidence of non-fatal injuries in 809 medium-large manufacturing companies in 1975. Injuries resulting in three or fewer days absence from work and injuries resulting in more than 3 days absence are recorded separately in the data field. The econometric analysis found that the greater the proportion of migrant workers employed in a German citizen's workplace the lower was the rate of frequency of both minor and severe injury experienced by the citizen employee. These company records reflect the evidence of more aggregate data that migrants tend to sustain injuries disproportionately, with this source suggesting that the differential was greater for the more severe injuries. The results were statistically significant, although the magnitude of the relation evidenced in regressions with comprehensive controls was small. The authors argue that the econometric results suggest that the presence of migrants bumps natives up into less hazardous job roles.

<sup>lvii</sup> Also of some interest in this context, Wrench (1995) reports evidence that the incidence of occupational fatalities as a whole, whether resulting from acute injury or chronic illness, is greater amongst black workers. Recent ethnic breakdowns from the BLS census of fatal occupational injuries suggests that this may be more the result of a differential incidence of recognised industrial disease between these groups, and rather less of acute injury experience (e.g. BLS, 1998).

<sup>lviii</sup> These are unweighted means across the rates of incidence shown by the ILO (1977, 56-8) for these seven years. The table below details the rates of incidence of fatal injury (per 100000 insured) in the metal processing ('metallurgy') industry and across all other industrial sectors (excluding construction). The evidence in the table that there was one year in which the fatal injury experience of migrants in the metal processing industry was less severe than that of nationals, and similarly one year in which the experience of migrants in other industries was less severe, cannot obscure the obvious general tendency for the rate amongst migrants to be greater.

|      |  | <b>Metal processing</b> |          | <b>Other industry</b> |          |
|------|--|-------------------------|----------|-----------------------|----------|
| Year |  | Nationals               | Migrants | Nationals             | Migrants |
| 1964 |  | 9                       | 9        | 14                    | 15       |
| 1965 |  | 9                       | 11       | 13                    | 11       |
| 1966 |  | 9                       | 15       | 13                    | 17       |
| 1967 |  | 9                       | 15       | 13                    | 21       |
| 1968 |  | 8                       | 14       | 10                    | 16       |
| 1969 |  | 8                       | 7        | 11                    | 15       |
| 1970 |  | 8                       | 8        | 9                     | 12       |



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